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ABSTRACT

This study of competency-based vocational education (CBVE) in Pennsylvania was guided by evaluation questions in eight areas: overall, current status of CBVE; implementation of the state Bureau of Vocational Education's (BVE) model of CBVE; characteristics of other CBVE models implemented in Pennsylvania; Pennsylvania Department of Education funding strategy; needs of local education agencies related to CBVE; correlates of successful CBVE implementation; positive impacts on students; and long-range policy recommendations. The methodology relied on intensive interviews of Pennsylvania Department of Education staff and senior personnel from local education agencies across the state. Teacher surveys were also distributed to collect information on the classroom implementation of CBVE. The study found that there is widespread support for competency-based vocational education across the state. The BVE's model of CBVE has achieved a moderately high level of implementation at the adult vocational-technical schools. Although supportive of the basic tenets of CBVE, community colleges and high schools have adopted the BVE model less extensively. Differences in the implementation of the Bureau's model across the three types of schools most likely was influenced by the targeting of state funds for training, technical assistance, and materials primarily to the adult vocational-technical schools. Administrative support for CBVE was also much higher at the adult vocational-technical schools and community colleges than at the comprehensive high schools. In spite of widespread support for CBVE, there were no evaluation data to support its positive impacts on students. The outstanding needs listed by CBVE implementers include the provision of additional resources to support program updating and modernization, especially in the high technology areas. (Author/KC)

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FINAL REPORT

EVALUATION OF COMPETENCY-BASED VOCATIONAL EDUCATION
(Contract #83-5005)

Joan L. Buttram, Keith M. Kershner, and Russell A. Dusewicz

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RESEARCH FOR BETTER SCHOOLS, INC.
PHILADELPHIA, PENNSYLVANIA

June 28, 1985

PENNSYLVANIA DEPARTMENT OF EDUCATION

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Abstract

Title: Evaluation of Competency-Based Vocational Education

Submitted by: Joan L. Buttram, Keith M. Kershner, and Russell A. Dusewicz, Research for Better Schools, Philadelphia, Pennsylvania

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Summary:

As part of its responsibility to assure that Pennsylvania students have the opportunity to participate in quality vocational education programs that respond to needs and employment realities, the Pennsylvania Department of Education (PDE) Bureau of Vocational Education (BVE) has invested heavily in competency-based vocational education (CBVE) for several years. RBS was selected to determine the status of CBVE in the vocational programs offered by area vocational technical schools (AVTSs), community colleges, and comprehensive high schools.

The study was guided by evaluation questions in eight areas: overall, current status of CBVE; implementation of the BVE's model of CBVE; characteristics of other CBVE models implemented in Pennsylvania; PDE funding strategy; needs of LEAs related to CBVE; correlates of successful CBVE implementation; positive impacts on students; and long-range policy recommendations. The methodology relied on intensive interviews of PDE and senior personnel from 75 LEAs across the state. Teacher surveys were also distributed to collect information on the classroom implementation of CBVE.

There is widespread support for competency-based vocational education across the state. The BVE's model of CBVE has achieved a moderately high level of implementation at the AVTSs. Although supportive of the basic tenets of CBVE, community colleges and high schools have adopted the BVE model less extensively. Differences in the implementation of the Bureau's model across the three types of schools most likely was influenced by the targeting of PDE funds for training, technical assistance, and materials primarily to the AVTSs. Administrative support for CBVE was also much higher at the AVTSs and community colleges than at the comprehensive high schools.

In spite of widespread support for CBVE, there were no evaluation data to support its positive impacts on students. The outstanding needs listed by CBVE implementers include the provision of additional resources to support program updating and modernization, especially in the high technology areas. Recommendations are presented regarding the development of more clearly defined policies concerning the application of CBVE to all three types of schools and the overall, long-term future of vocational education in Pennsylvania.

Executive Summary

Background

The Pennsylvania Department of Education (PDE) Bureau of Vocational Education (BVE) has invested heavily in competency-based vocational education (CBVE) for several years. This investment has involved model development, participation in national consortia, funds for local implementation, in-service training, materials development, extensive technical assistance, and other support services. Prior to 1982, the state approached CBVE primarily as a research and development effort. In 1982, the CBVE program was folded into the BVE's Exemplary Programs project, focusing on the dissemination and utilization of successful local CBVE programs.

Although these efforts had been monitored and documented through normal PDE mechanisms, there was a need to pull together the vast array of existing information and to collect new data which together would provide a clear picture of the current status of competency-based vocational education throughout the state. RBS was selected to conduct these tasks through an evaluative study. The study's objectives were to determine the overall status of CBVE, the implementation of the BVE's model of CBVE, characteristics of other CBVE models implemented in Pennsylvania, the impact of PDE funding strategy on implementation of CBVE, needs of LEAs related to CBVE, correlates of successful CBVE implementation, positive impacts on students, and long-range policy recommendations. The goal of the project was to provide information to the PDE for policy-making purposes.

Methods

The study was guided by a set of eight questions that paralleled the evaluation objectives listed above. Three data sources were employed in the study: documentation of CBVE, interviews with PDE officials involved in the development and implementation of CBVE, and interviews and surveys of administrators and teachers who have implemented CBVE. Extensive background information was collected including research literature, state reports, manuals and other training materials on competency-based vocational education. Nineteen PDE representatives were interviewed as well as senior administrative personnel from 75 LEAs. In addition, classroom teachers from 28 LEAs implementing CBVE were surveyed. The analysis plan related each of the evaluation questions to one or more data sources. Analyses were primarily descriptive.

Results and Conclusions

Widespread support for the concept of competency-based vocational education exists throughout Pennsylvania. The Bureau's model of CBVE has achieved a moderately high level of implementation at the AVTSs. Lower levels of implementation were found for the community colleges and comprehensive high schools, where student competencies tended to be organized by broad skill or career areas rather than by specific occupational skills (as in the Bureau's CBVE model).

Differences in implementation levels most likely were influenced by the PDE funding strategy. Most of the resources provided by PDE (e.g., training, technical assistance, materials, and funding for the curriculum coordinator positions) were directed to the AVTSs. As a result, the AVTSs' implementation of CBVE was higher and in step with the Bureau's model.

Also, administrative support for CBVE was higher at the AVTSs than at the high schools. Community college involvement with CBVE occurred independent of the state's effort.

In spite of strong support for CBVE, there was little evidence to support the positive impacts of CBVE on students. Most respondents believed that CBVE offered instructional advantages but no empirical documentation was uncovered by the present study.

The 75 educational agencies included in the study were asked to identify their outstanding needs relative to CBVE. Most requested additional resources for program modernization and development, as well as continued staff development. Others suggested that the state develop clearer guidelines and policies for vocational education, including CBVE. Many AVTS personnel indicated concern with the long-term viability of vocational education because of increased competition for secondary level students, more stringent graduation requirements (Chapter 5) and vocational program hours (Chapter 6), and decreases in vocational funds for modernization and development of programs.

Recommendations

The following recommendations for PDE action were formulated based on the above findings.

1. Develop a more concise description on the essential elements of the BVE's model of CBVE.

2. Develop a clearer policy on the application of the BVE's model of CBVE to community colleges and comprehensive high schools.

3. Provide state funds to consortia of schools to modernize curriculum and/or to develop programs for high technology areas.

4. Revise vocational education teacher certification requirements to include coursework on CBVE.

5. Design and review future vocational education initiatives to ensure that administrative support, sufficient resources, and other key educational change elements are present as part of the development effort.

6. Conduct an evaluation of the impact of CBVE on high school graduates.

7. Develop a comprehensive, long-term plan for vocational education.

I. BACKGROUND

This section of the report describes the purpose of the evaluation study, related research, and the history of CBVE in Pennsylvania. It concludes with an outline of the organization of the remainder of the report.

Purpose of the Study

As part of its responsibility to assure that Pennsylvania students have the opportunity to participate in quality vocational education programs that respond to needs and employment realities, the Pennsylvania Department of Education (PDE) Bureau of Vocational Education (BVE) has invested heavily in competency-based vocational education (CBVE) for several years. This investment has involved policy statements, model development, participation in national consortia, funds for local implementation, in-service training, materials development, extensive technical assistance, and other support services. Although these efforts have been monitored and documented through normal PDE mechanisms, there was a need to pull together the vast array of information and data existing on CBVE in Pennsylvania that describe prior efforts and to collect new information that provides a clear picture of the current status of CBVE throughout the state. In addition to examining prior efforts and current status, this evaluation study analyzes the extent to which CBVE programs match the BVE model, describes variations from this model, explores the extent to which PDE efforts have met local needs, examines the factors that seem to be correlates of successful implementation, and documents impact evaluations conducted by local CBVE programs. Although an analysis of the return on PDE's investment in CBVE is important in an accountability sense, perhaps the primary outcome of the evaluation is a

data base on CBVE which will be of use to PDE in making policy decisions in future years. This is particularly important in a time of diminishing funds for vocational education, when resource allocation decisions become critical.

Related Research

Although the competency-based vocational education movement has gained in momentum and emphasis primarily over the past decade or so, its roots can be traced to the philosophy of experimentalism (Klingstedt, 1972). Indeed, CBVE is based largely on John Dewey's work in the early parts of the twentieth century. CBVE is closely related to other education movements of the sixties and seventies, such as individualized instruction, instructional objectives, mastery learning, programmed instruction, and criterion-referenced testing. The "effective schools" movement of the 1980s shares much in common with CBVE. With increasing public demand for accountability and excellence in public education, one would predict that CBVE will maintain a prominent role in vocational education for years to come.

Several authors have provided definitions of competency-based vocational education (e.g., Spady, 1977; Knaak, 1977; Nickse and McClure, 1981; and Bell, 1980). These definitions usually list the desirable characteristics of a competency-based approach, such as, performance-based, individually paced, responsive to individual needs, immediate feedback, task analyses, measurable objectives, criterion-referenced assessment, continuing program updates, input from the field, clear expectations, and credit for prior achievements. These desirable features are similar to those included in the BVE model of CBVE.

Several authors have translated these desirable features into implementation checklists in order to determine the level of CBVE implementation (Porter, 1982; Harrington, Norton, Greer, and Puleo, 1983). In fact, there have been similar efforts in Pennsylvania to develop CBVE implementation checklists (Rozman, 1977; Epler, 1981). These checklists provide good, operational definitions of CBVE, incorporating the essential features of the BVE model, as well as indicating those aspects that are slightly different from the BVE model.

Goldhammer and Weitzel (1981) and Polk (1982) have noted problems with the multiplicity of definitions for competency-based education and the features that characterize it. Many educators use some of the elements of CBVE, such as mastery learning or criterion-referenced testing, and assert that they are "fully" implementing a competency-based program. However, there is often a basic misunderstanding of what competency-based programmatic elements actually should entail, and findings of CBVE evaluation studies are frequently misleading because of these misunderstandings and lack of consensus.

Despite the claims made for CBVE and the massive literature which stands behind it, evaluations of the approach are scarce (Polk, 1982). Grant, Elbow, Ewens, Gamson, Kohli, Neuman, Olesen, and Riesman (1979) indicated there was no evidence that students completing CBVE programs were more competent or employable than similar students completing traditional programs. The major problem in the Grant et al. study was the lack of conclusive data. On the other hand, Vincent and Cobb (1977) found evidence of the superiority of the CBVE approach in Kentucky of cognitive skills and occupational skills. They also found CBVE to be a cost-effective approach.

The Washington D.C. Public Schools (1980); Raphaelson, Charters, and Wachtman (1976); and Poorman and Flickenstein (1978) also found positive effects in their evaluation studies of CBVE. Finally, research and evaluation studies of elements of CBVE, such as mastery learning, would lead one to predict that CBVE would have significant impacts on students.

Regarding evaluation methodology, Porter (1982) indicated that traditional evaluation procedures are appropriate in assessing CBVE programs, but there are unique problems due to the lack of consensus about definitions and the necessary emphasis on the assessment of student competencies. The major challenges are to eliminate ambiguity of terms and to assure the consistency of criteria. She suggests that intensive site visits to CBVE programs are the only way to meet these challenges. Other approaches for evaluating CBVE have been described by the Florida State Department of Education (1976). A CBVE self-evaluation procedure developed by the Greater Johnstown AVTS was described in the Pennsylvania RCU bibliography on successful CBVE practices.

Another aspect of CBVE important to its evaluation is its complexity as an educational innovation. Recent research has revealed much about the processes of knowledge utilization and implementation of innovative practices (e.g., Lehming and Kane, 1981). A comprehensive RBS study of the change process examined three stages of innovation: (1) initiation, (2) implementation, and (3) continuation (Corbett, Dawson, and Firestone, 1984). Different CBVE implementers in Pennsylvania are at different points along this continuum with regard to CBVE. RBS' research has identified eight important conditions that affect the successful implementation of innovations. These include the availability of resources, incentives and disincentives for innovative behavior, school organizational linkages, school priorities,

faculty factions, turnover in key administrative/teacher positions, current decision-making practices, and prior change projects. These empirically devised factors are similar to those reported by Berman (1981) in his synthesis of the literature on innovation and change.

Ridley and Farrar (1982) used the theoretical knowledge base on innovation and change to study the implementation of competency-based education throughout the state of New York. They found several factors that were related to successful implementation including administrator support, practicality for classroom use, teachers' perceptions of needs, teachers' orientation and training, resource and materials availability, teachers' autonomy and initiative, and past experiences with innovation. Their findings are similar to those found in the RBS study and in the theoretical literature.

Together, this literature has important implications for any examination of the implementation of competency-based vocational education in Pennsylvania. The study needed to be sensitive to potential differences in the definition of CBVE among implementers in the state. Also, as the Porter article clearly indicated, there is a need for an in-depth site visit methodology to control the problems associated with evaluating such a phenomenon as complex as CBVE. Moreover, RBS' research on innovation and change demonstrates that several school context variables may account for success or failure of innovative programs. Ridley and Farrar also found this in their study of CBE implementation in New York. The present evaluation study does examine the fidelity of implementation with regard to the BVE model and several other critical implementation variables and issues. This approach should provide a data base which can effectively serve PDE's future policy decisions for vocational education.

CBVE in Pennsylvania

Competency-based vocational education in Pennsylvania goes back to the early 1970s, when educators became concerned about the vocational curriculum in the state. One issue involved duplication between secondary and post-secondary programs, but there was also a more general feeling that the vocational curricula were uncoordinated and unrelated to the tasks and standards prevalent in industry. The CBVE concept was seen as a potential means for pulling the curriculum together, changing instructional methods, and validating program content in an articulated way.

The early activities related to CBVE included a series of trial-and-error experimental efforts. In 1971, the Admiral Peary Area Vocational-Technical School in Ebensburg was funded to develop a modularized vocational curriculum. Then, in 1972 and a few years following, a large project was conducted by the Pennsylvania State University to develop a full curriculum model and all of the associated materials needed for classroom use. In the middle 1970s, another effort to achieve centralized development was attempted at Millersville State College.

The CBVE approach began to change and mature in 1976 when Pennsylvania joined V-TECS - the Vocational-Technical Education Consortium of States. The early experiences with CBVE had shown that the development of competency-based materials is both necessary for success in local schools and a difficult, time-consuming, costly process. V-TECS represents a consortium approach to getting this job done. Pennsylvania also participated in the Consortium for the Development of Professional Materials sponsored through the National Center for Research in Vocational Education at the Ohio State University (Norton, Hamilton, Harrington, Quinn, Greer, and Long,

1980). Other examples of large scale curriculum projects are the Mid-America Vocational Curriculum Consortia (MAVCC) and the American Association for Vocational Instructional Materials (AAVIM). Several states, such as Oklahoma, Florida, and Wisconsin, have invested heavily in the development of CBVE curriculum materials.

Pennsylvania's emphasis on competency-based vocational education became stronger with their initial involvement with V-TECS and the National Center Consortium. A policy statement encouraging LEAs (including AVTSs, IUs, and community colleges) to use a competency-based approach followed, together with a detailed implementation model. PDE supported implementation of the model through development of staff training materials and funding personnel within the LEA to assist with CBVE.

Several notable sets of training materials were produced. For example, PDE funded a multi-year project by the Reading-Muhlenberg Vocational School, the Schuylkill County Area Vocational Technical School, and the Berks County Vocational Technical School to develop a comprehensive inservice training program for teachers (Epler, 1981; Lyba, n.d.). The Staff Training Educational Plan (STEP) was developed to support the implementation of the state's CBVE model. In addition to the STEP materials, Temple University developed several Professional Preparation Modules designed to supplement the six administrative manuals prepared by the Ohio State Center (Adamsky, Klingler, and Armstrong, 1979). All of these inservice materials are still being used by Pennsylvania school districts (Maier, 1983).

Another approach used by PDE to support CBVE implementation was to provide funds for a CBVE curriculum coordinator who would be responsible for overseeing the process at the local level. Typically, funds would be

provided on a diminishing basis for three years. In addition, the RCU disseminated information about successful practices in implementing CBVE (Dittenhafer, n.d.) and provided technical assistance and on-site training through central office and regional office field staff.

One PDE staff member has characterized the pre-1982 phase of CBVE as a research and development stage. In 1982, the CBVE program was folded into the BVE's Exemplary Programs Project. The function of this project is to provide support for small-scale dissemination and adoption grants to LEAs. Hence, this phase has been dubbed one of dissemination and utilization.

Besides the continuing Exemplary Programs Project, PDE's most recent thrust in relation to CBVE has been evaluative. In 1984, the Research Coordinating Unit completed a quantitative study of CBVE implementation (Dittenhafer, 1984). The findings indicated that CBVE has been widely implemented across the state, particularly at the Area Vocational Technical Schools. This quantitative assessment was seen as the first phase of the study of CBVE's impact. The present evaluation is the second, more qualitative, phase of that study.

Organization of the Report

In addition to this background, the report contains four chapters. The next chapter describes the study methodology including the evaluation questions, data sources, analysis plan, and limitations of the study. A presentation of the findings of the study follows. Next, study conclusions and recommendations are discussed. The final chapter describes the plan for disseminating the study results.

II. METHODS

This chapter reports on the conduct of the evaluation study. Specifically, it describes the evaluation questions, samples, instruments, and data collection and analysis plans used by RBS to determine the current status and impact of CBVE. The limitations of the study are also discussed.

Evaluation Questions

Eight evaluation questions were identified to organize and structure the collection of data. These questions are listed below.

1. What is the overall, current status of CBVE across the state?

2. To what extent has the Bureau's model of CBVE been implemented by education agencies throughout the state? In particular, the study will focus upon the following elements of the CBVE model (described in the objectives section of the RFP):

   - job analysis as basis for programmatic content
   - updating programs through craft advisory committees
   - performance objectives
   - individualized student programs
   - clear expectations and evaluation procedures
   - attainment of competency/mastery
   - criterion-referenced measures
   - credit for prior achievement.

3. What are the characteristics of the other models of CBVE being implemented throughout the state?

4. How has the PDE funding strategy affected the implementation of CBVE?

5. Has PDE met the needs of the broad range of educational agencies throughout the state and what are the outstanding needs?

6. What are the correlates of successful implementation of CBVE?

7. What evidence exists that CBVE has positive impacts on students' vocational development?

8. What policy recommendations can be made as PDE develops long-range plans for assuring quality vocational education programs across the state?

The first evaluation question acts as an umbrella, encasing almost all of the other, more specific evaluation questions. Evaluation question two focuses on the extent of implementation of the BVE's model of CBVE while evaluation question three addresses the implementation of other CBVE models. Evaluation questions four, five, and six examine the adequacy and impact of PDE funding and resources in meeting the needs of educational agencies implementing CBVE as well as other factors that can be linked to the successful adoption of this model. Question seven searches for evidence to support the positive impacts of CBVE on students. The final evaluation question considers the information collected to answer the preceding seven questions and formulates policy recommendations for assuring quality vocational education programs across the state. Combined, the eight evaluation questions describe the current status of CBVE, identify factors that contributed to its current status as well as the outstanding needs of educational agencies implementing CBVE, and recommend policies to assure quality vocational educational programs in the state.

Study Sources

Three groups of data sources were critical to RBS in conducting the evaluation study: (1) documentation on CBVE from PDE and other organizations, (2) PDE officials involved in the administration of CBVE, and (3) representatives of Pennsylvania local educational agencies. Each is described in more detail below.

CBVE Documentation

A great deal of documentation exists which describes the goals, objectives, funding, procedures, impacts, and operations of competency-based vocational education. In some cases, these documents represent PDE materials regarding the CBVE model; in other cases, the documents represent ongoing research and development on competency-based vocational education. A complete list of the documents reviewed by RBS in conducting the evaluation study are listed in Chart 1. Reviews of these documents were used by RBS to prepare the historical perspective of CBVE in Pennsylvania presented in the introductory chapter of this report as well as to develop the evaluation instruments discussed later in this section.

PDE Representatives

During initial discussions with the PDE project officer, key representatives of PDE were identified as critical sources of information pertaining to CBVE. These representatives had either participated in the initial planning and design of the state's CBVE effort or had responsibility for assisting/monitoring the vocational programs of educational agencies throughout Pennsylvania. Chart 2 lists the 19 PDE representatives or consultants interviewed by RBS.

Chart 1

PDE Background Documents

1. Professional Preparation Modules, Vocational Teacher (Temple University, 1984).

   - Establish an Outcome Orientation Grading System
   - Develop a Module for Individualized Instruction
   - Validate an Occupational Analysis
   - Arrange for the Improvement of Vocational Facilities for Individualized Instruction
   - Prepare Valid Performance Objectives
   - Assist Vocational Personnel Move Toward Full Adoption of Performance Based Vocational Education (PBVE)

2. Exemplary Programs in Vocational Education (PDE materials folder, 1984).

3. Staff-Training Educational Plan (Schuylkill County Vocational-Technical School, n.d.).

4. A Study to Assess the Impact of Competency-Based Vocational Education in Pennsylvania, Phase I (PDE, n.d.).

5. Successful Practices in Implementing Competency-Based Vocational Education (PDE, n.d.).

Chart 2

PDE Representatives Interviewed by RBS

PDE Staff Member	RBS Interviewer
Ralph Benson	Buttram
Ellerslie Blyler	Buttram
John Brandt	Kershner
Jacqueline Cullen	Buttram
Carroll Curtis	Buttram
Clarence Dittenhafer	Buttram
Clara Gaston	Neubauer
Wayne Grubb	Neubauer
Robert Harrison	Buttram
Lane Kemler	Buttram
Carolyn Kratz	Buttram
Charles Lebo	Neubauer
Vernon Register	Kershner
Frank Rozman	Buttram
Helen Swaincott	Kershner
Thomas Winters	Buttram

Pennsylvania Educational Agencies

The primary data sources concerning the current status of CBVE were the educational agencies across the state. Three types of educational agencies were sampled: (1) area vocational technical schools (AVTSs), (2) community colleges, and (3) comprehensive high schools. With three exceptions, educational agencies included in the RBS sample were also in the initial data base of the RCU Phase I study. The three educational agencies were added to the RCU Phase I data base by RBS to increase the respondent pool in certain categories.[1]

Educational agencies were initially randomly selected to participate in the current study within four stratification factors: (1) type of school, (2) implementation status, as reported in the RCU Phase I study, (3) PDE funding status, and (4) geographic region. Educational agencies were then assigned to the telephone interview or site visit category; the geographic proximity of educational agencies to each other was considered in making these assignments. The list of selected education agencies was reviewed by the PDE project officer and some minor revisions were made based on his feedback and suggestions.

RBS contacted the selected education agencies by telephone or mail to solicit their participation in the study. Four comprehensive high schools

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[1] Although over 80 percent of the AVTSs responded to the RCU survey, much lower response rates were obtained for the community colleges (29 percent) and comprehensive high schools (40 percent). In order to insure a minimum 50 percent response pool from which to select the evaluation study samples, RBS surveyed by telephone an additional 4 community colleges and 32 comprehensive high schools. The results of the RBS survey generally did not contradict the RCU-obtained survey results. A more detailed description of this process is included in the interim report submitted to PDE.

opted not to participate. In one case, the school had initially indicated that it was implementing CBVE; however, after more consideration, the school administration decided that it was not implementing CBVE and therefore wished to withdraw from the site visit. In the case of another school, the school vocational department head did not have time to participate in the telephone interview. The other two schools returned the initial contact letter with short notes indicating their decisions not to participate. In these two cases, RBS was able to substitute other schools. In the other two cases, substitution was not possible because of late notifications.

The final sample of 75 educational agencies that participated in the current evaluation sample is presented in Chart 3. It should be noted that educational agencies are listed according to the implementation status reported in the RCU survey; in the case of 1 AVTS and 11 comprehensive high schools, these self-reports were found to be inaccurate. Approximately three-fourths (57, or 76 percent) were originally included as CBVE implementers, the remaining fourth (18, or 24 percent) as non-implementers of CBVE.

Chart 3

RBS Evaluation Study Sample of Educational Agencies

Type of School/ Data Collection Method	CBVE Implementer	Non-CBVE Implementer
AVTS-Telephone Interview	Bradford County AVTS Central Westmoreland AVTS Franklin County AVTS Huntingdon County AVTS Indiana County AVTS Lebanon County AVTS Lehigh County AVTS Mercer County AVTS Monroe County AVTS Walter B. Saul Technical High School (Philadelphia)	Clarion County AVTS Seneca Highlands AVTS
AVTS-Site Visit	Beaver County AVTS Berks County AVTS Edward Bok Technical High School (Philadelphia) Clearfield County AVTS Cumberland-Perry AVTS Delaware County AVTS M. Dobbins Technical High School (Philadelphia) Erie County AVTS Hazleton AVTS Greater Johnstown AVTS Lackawanna County AVTS Lancaster County AVTS Lawrence County AVTS Mon Valley AVTS Northumberland County AVTS Admiral Peary AVTS (Ebensburg) A. Philip Randolph Skills Center (Philadelphia) Schuylkill County AVTS Alvin A. Swenson Skills Center (Philadelphia) York County AVTS	Centre County AVTS * Fayette County AVTS *
Community College-Telephone Interview	Williamsport Area Community College	

Type of School/ Data Collection Method	CBVE Implementer	Non-CBVE Implementer
Community College-Site Visit	Delaware County Community College	Bucks County Community College
Comprehensive High School-Telephone Interview	Bradford Area Senior High* Ferndale Area High School* Honesdale High School* (Wayne Highlands) North Allegeny Senior High School Sayre Area High School* Sharpsville Senior High School Solanco High School Steelton-Highspire Junior-Senior High School	J. Bartram High School (Philadelphia) Beaver Falls Senior High School (Big Beaver Falls Area) Bedford Senior High School Elizabethtown Area High School H. H. Furness High School (Philadelphia) Hazleton High School Mifflinburg Area High School New Castle Senior High School Reading Senior High School Red Land High School (West Shore) Tulpehocken Area Senior High School
Comprehensive High School-Site Visit	Allderdice Senior High School (Pittsburgh) Apollo-Ridge Senior High School Carlisle Senior High School Central Dauphin Senior High School* Curwensville Area Junior Senior High School Manheim Central Senior High School Neshaminy High School* Norristown Area High School Penn Hills Senior High School Pennsbury High School Pocono Mountain Senior High School* Owen J. Roberts High School Shikellamy High School*	Bellefonte Senior High School Brownsville Area Senior High School

Type of School/ Data Collection Method	CBVE Implementer	Non-CBVE Implementer
	Tyrone Junior Senior High School*	
	Warren Area High School*	
	Warwick Senior High School*	
	Wilmington Area Junior Senior High School*	

*Original RCU-based school implementation status was changed as a result of information gathered during the RBS interview.

In reality, the RBS study included 47 CBVE implementers (63 percent) and 28 non-CBVE implementers (37 percent). As indicated in Table 1, the sample included 34 AVTSs, 3 community colleges, and 38 comprehensive high schools. The vast majority of AVTSs and community colleges were

Table 1

Types of School of Sample

Type of School	CBVE Implementers		Non-CBVE Implementers		Total	
	Number	Percent	Number	Percent	Number	Percent
AVTS	31	66	3	11	34	45
Community College	2	6	1	4	3	4
Comprehensive High School	14	28	24	85	38	51
Total	47	100	28	100	75	100

implementing CBVE; however, only one-third of the comprehensive high schools were CBVE implementers. More descriptive information on the 75 educational agencies (e.g., administrative and staffing patterns, instructional and support programs available to students) is included in Appendix A.

Two methods were used to gather data from the 75 educational agencies - telephone interviews and site visits.

Table 2

Data Collection Methods

Type of School	Telephone Interview		Site Visit	
	Implementer	Non-Implementer	Implementer	Non-Implementer
AVTS	10	2	21	1
Community College	1	0	1	1
High School	4	15	9	7
Total	15	17	31	12

As indicated in Table 2, 32 (43 percent) of the sites received telephone interviews while 43 (57 percent) were visited by RBS.

Interview Respondents

For each educational agency included in the sample, RBS interviewed the individual indicated by the agency head as most knowledgeable about the curriculum or CBVE program. At some schools, supplementary information was provided by other staff. Tables 3 and 4, respectively, present the position titles and responsibilities of the primary interviewees.

Table 3

Position Title of Interviewees

Title	CBVE Implementers		Non-CBVE Implementers		Total	
	Number	Percent	Number	Percent	Number	Percent
Executive Director	13	27	3	11	16	21
Secondary Program Director	8	17	0	0	8	11
Principal	6	13	10	36	16	21
Department Chairman	1	2	5	18	6	8
Director/Coordinator of Curriculum	10	21	2	7	12	16
Assistant Dean/Vice-President	4	9	1	4	5	7
Other	5	11	7	24	12	16
Total	47	100	28	100	75	100

Table 4

Position Responsibilities of Interviewees

Responsibilities	CBVE Implementers		Non-CBVE Implementers		Total	
	Number	Percent	Number	Percent	Number	Percent
Overall administration	19	40	13	46	32	43
Secondary program administration	9	19	0	0	9	12
Curriculum development	6	13	1	4	7	9
Vocational program administration	3	6	6	21	9	12
Variety of administrative assignments	6	13	5	18	11	15
Other	4	9	3	11	7	9
Total	47	100	28	100	75	100

Over half were senior personnel responsible for the secondary level program or overall administration of the educational agencies. Staff responsible for curriculum made up the other half of the interview sample.

During the interview, RBS checked to determine whether its respondents had completed the earlier RCU Phase I survey. As reported in Table 5, substantial numbers of RBS interviewees did not recall whether they had completed the RCU survey. For those that did remember, RCU respondents tended to be more frequently from schools implementing CBVE than not implementing CBVE.

Table 5

Interviewee Responded to RCU Survey	CBVE Implementers		Non-CBVE Implementers[a]		Total	
	Number	Percent	Number	Percent	Number	Percent
Yes	22	47	7	28	29	40
No	11	23	6	24	17	24
Unsure	14	30	12	48	26	36
Total	47	100	25	100	72	100

[a]Three of the non-CBVE implementers had not participated in RCU survey.

Of more interest, RBS contrasted its own CBVE status reports with those gathered by the state one year earlier (see Table 6). Twelve (17 percent) of the classifications were changed. In the case of one AVTS, CBVE

Table 6

CBVE Implementation Status

1984 Status	1985 Status		
	Implementer	Non-Implementer	Total
Implementer	46	11	57
Non-Implementer	1	14	15
Total	47	25	72

implementation had begun since the RCU survey one year earlier. The remaining 11 cases involved high schools that had indicated to the RCU that they were implementing CBVE; however, during the RBS study, it became clear that the schools were not CBVE-implementers. In many of these cases, the RCU survey was completed by personnel not most knowledgeable about the particular vocational curriculum and so they were endorsing the concept of CBVE rather than the application of the model in their vocational programs.

Teacher Survey Sample

The evaluation design provided for the survey of random samples of teachers from the original sample of 39 RCU-identified CBVE implementers. Due to inaccuracies in the RCU-reported implementation status in 8 high schools and the non-response of 3 sites (1 AVTS, 1 community college, and 1 high school), the total number of sites returning surveys was reduced to 28. The survey was completed by 348 teachers across the 28 sites (19 AVTSs, 1 community college, and 8 comprehensive high schools). The vocational subject areas of responding teachers are summarized in Table 7.

Table 7

Vocational Subject Area of Responding CBVE Teachers

Vocational Area	AVTS		Com. College		HS		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Agriculture	6	2	0	0	3	5	9	3
Business	7	3	0	0	26	45	33	9
Distributive Education	10	4	0	0	2	3	12	3
Health	28	10	0	0	0	0	28	8
Home Ec/Consumer Ed	20	7	1	9	6	10	27	8
Industrial Arts	0	0	0	0	0	0	0	0
Trade and Industry	169	60	4	36	10	17	183	53
Other	17	6	2	19	0	0	19	5
None	21	8	4	36	12	20	37	11
Total	278	100	11	100	59	100	348	100

There were marked differences in the vocational content areas across the three types of schools. As might be expected, the largest percentage of teachers at AVTSs was in the trade and industry area. Community college faculty were distributed across trade and industry and other areas (often data processing). High school faculty were generally clustered in three areas: business, trade and industry, and none.

Responding teachers were also asked to indicate their years of teaching experience and their years of experience with CBVE. Table 8 reports the average number of years for both.

Table 8

Average Years of Experience of Responding CBVE Teachers

Years of Experience	AVTS			Com. College			HS			All Sites		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Teaching Overall	11.6	5.8	257	12.2	7.8	11	13.6	6.4	44	11.9	6.0	312
CBVE	6.8	5.3	219	9.8	7.1	8	7.0	9.4	23	6.9	5.8	250

There was more variance across the sites in years of CBVE experience than in overall years of teaching experience.

Evaluation Instruments

Four instruments were developed by RBS to structure the collection of information from PDE representatives and educational agencies:

1. PDE CBVE Interview
2. CBVE Telephone Interview Form
3. CBVE Site Visit Form
4. CBVE Teacher Survey.

In developing the study's forms, drafts were submitted to PDE for review and revised as necessary. The four forms are described below. In addition, copies are included in Appendix B. No form was developed to structure the review of existing CBVE documents.

PDE CBVE Interview

This interview form is divided into three main sections. The first section addresses the history and context for the state's development and involvement in CBVE. The second section focuses on the local adoption of CBVE. It gathers information on the five steps followed by PDE to encourage

adoption of CBVE by educational agencies; the current status of CBVE among AVTSs, community colleges and comprehensive high schools as well as correlates of successful local adoptions; and variations that have occurred in the CBVE model as it was adopted by educational agencies across the state. The final section of the interview form concentrates on the impact of the state's effort on local implementation of CBVE; positive impacts of the program on students; and policy recommendations for the continued implementation of CBVE across Pennsylvania. Interviews typically ranged from 1 to 2 hours.

CBVE Telephone Interview Form

As expected from its name, this form was developed to structure the collection of information from educational agencies during the telephone interviews. The form is divided into four sections. The first section collects background information about the interviewee's and school's involvement in the RCU Phase I study. The second section gathers data on the CBVE programs at the school, such as the types of programs, training and technical assistance provided to facilitate the implementation of CBVE, the extent of implementation of PDE CBVE model, and factors that contributed to the adoption or rejection of CBVE. Parallel information is collected for non-CBVE programs at the school in the third section of the form. The final section offers interviewees the opportunity to comment on any other topics relevant to the school's adoption or rejection of CBVE. Telephone interviews, once scheduled, generally required 45 to 60 minutes to complete.

CBVE Site Visit Form

The third form developed by RBS for the study was used during site visits to educational agencies. As with the telephone interview form, the site visit form was divided into four sections: background information, CBVE programs at the school, non-CBVE programs at the school, and other comments. All of the questions on the CBVE Telephone Interview Form were included in the CBVE Site Visit Form as well as other items related to the initial decision to implement CBVE, the administration and organization of the school, possible impacts of CBVE, and future plans for CBVE. The length of site visits varied from 45 minutes to 3 hours, typically averaging about 90 minutes.

CBVE Teacher Survey

A fourth form was developed to gather data directly from teachers implementing CBVE. The form asked teachers to indicate the extent of implementation of various parts of the BVE's CBVE model, the primary instructional materials, training or technical assistance received, possible impacts of CBVE, factors that contributed to the adoption or rejection of CBVE, and outstanding needs. The 15 minute paper and pencil survey was designed to be completed anonymously.

Data Collection Methods

RBS relied on three methodologies to collect data for this evaluation study. First, RBS staff reviewed existing documents on the development and implementation of competency-based vocational education across Pennsylvania. Notes were kept by the researchers as they reviewed these documents and were later synthesized to prepare the historical perspective in Chapter I.

Interviews (via telephone or in-person) were extensively used to collect information from both PDE and educational agency representatives. Again, the researchers recorded interviewee comments on the interview forms; these forms were later analyzed to answer the eight evaluation questions. The final data collection methodology involved paper and pencil surveys to collect teacher data on the implementation of CBVE in their classrooms. These surveys were distributed by the school contact person prior to the RBS site visit; in most cases, teachers had voluntarily and anonymously completed and returned their surveys to the school contact person prior to RBS' arrival. In a few cases, the surveys were returned at a later date to RBS. Regardless of data collection methodology, all respondents were told that their responses would be treated confidentially and only reported in aggregated form.

Data Analysis Plan

The overall data analysis plan provided for the analysis of data to be organized to answer each of the eight evaluation questions. Specifically, documentation review notes, interview items, and teacher survey items were matched to specific evaluation questions. Each question was then answered using the information from one or more data sources as depicted in Chart 4.

Qualitative data gathered using each form were first categorized or grouped into similar responses; the frequency and percentages of individuals responding to each category were then calculated for the three types of educational agencies individually (i.e., AVTS, community college, or comprehensive high school) for implementers and non-implementers. Data gathered via telephone interviews versus site visits were aggregated separately and

Chart 4

Data Analysis Plan

Evaluation Questions	Data Source: PDE Documents	PDE Interviews	Telephone Interviews	Site Visits	Teacher Surveys
1. What is the overall, current status of CBVE across the site?	✓	✓	✓	✓	✓
2. To what extent has the Bureau's model of CBVE been implemented by education agencies throughout the State?	✓	✓	✓	✓	✓
3. What are the characteristics of the other models of CBVE being implemented throughout the State?		✓	✓	✓	
4. How has the PDE funding strategy affected the implementation of CBVE?		✓	✓	✓	
5. Has PDE met the needs of the broad range of educational agencies throughout the State and what are the outstanding needs?		✓	✓	✓	✓
6. What are the correlates of successful implementation of CBVE?	✓	✓	✓	✓	✓
7. What evidence exists that CBVE has positive impacts on students vocational development?		✓		✓	✓
8. What policy recommendations can be made as PDE develops long-range plans for assuring quality vocational education programs across the State?		✓	✓	✓	✓

compared to determine if method of data collection affected the interviewees' responses. If no differences were found, the data were combined and reported; if differences were found, the data were reported separately. Descriptive statistics (e.g., means, standard deviations) were calculated for quantitative data (e.g., Likert ratings on extent of CBVE implementation obtained from the CBVE Telephone Interview Form, CBVE Site Visit Form, and CBVE Teacher Survey). As with the qualitative data analyses, telephone and site visit data were aggregated separately and compared to determine if the method of data collection produced different results; in cases where no differences were found, the data were combined and reported together.

Analyses were conducted to determine the impact of several key variables (e.g., PDE funding of curriculum coordinator position, length of CBVE implementation). For those educational agencies with both site visit and teacher survey data, one additional set of comparisons was made. The extent of CBVE implementation ratings collected from teachers (averaged for each educational agency) and administrators were compared. These comparisons served two functions. It first provided a validity check on the accuracy of data from the two sources. In addition, it allowed us to examine the variability of CBVE implementation within educational agencies.

Limitations of the Study

There were several factors which limited the study's effectiveness and should be kept in mind in considering the findings and recommendations presented in the remaining chapters of this report.

First, the study relied almost exclusively on the self-reports of educational agencies to determine the extent of CBVE implementation as well

as other information. Due to the limited resources available to the investigators, it was not possible to verify through firsthand observation the ongoing implementation of CBVE in school programs. Although RBS does not suspect the validity of the data presented in this report, the reader should be cautioned that the reported fidelity of individual schools in implementing the BVE's CBVE model may deviate from day-to-day, among teachers, or as it was experienced by individual students.

Second, the state's involvement in competency-based vocational education began many years before the conduct of this evaluation study. In discussing the introduction to and involvement with CBVE of the educational agencies interviewed, it was clear that many respondents were unclear about specific details or events (e.g., training and technical assistance received from PDE). In other cases, staff turnovers had occurred and remaining staff were not present or involved in the activities or decisions of concern. The time difference undoubtedly affected the validity of some interview responses that related to past CBVE events or activities.

Finally, the implementation of CBVE has not occurred in a vacuum. Factors not originally considered (e.g., declining vocational education student enrollments, Pennsylvania Chapters 5 and 6 requirements) have affected and will continue to affect the implementation of CBVE. Evaluation findings presented in the remainder of this report should be considered not only in terms of the historical underpinnings of CBVE, but also within the current and future contexts of vocational education overall.

III. ANALYSES

This chapter summarizes the results of the quantitative and qualitative analyses conducted by RBS. Evaluation questions 2 through 7, focusing on particular aspects of CBVE, are each answered using the information gathered in this study. As the first evaluation question addresses the overall status of CBVE, it will be answered in the final chapter as part of the summary of the evaluation study findings.

Implementation of PDE BVE's Model of CBVE

The first set of data focuses on the extent of implementation of the BVE's model of CBVE across the state. In order to address this question, all CBVE implementer interview respondents were asked to rate on a 4-point Likert scale the extent of implementation of the 10 CBVE model elements and their sub-elements. In addition, the teacher surveys solicited teacher assessment of implementation using the same rating procedure. This section presents the results from both data sources.

Interviews

Mean ratings for interview responses for the ten elements were calculated and are reported in Table 9. Individual sub-element ratings are reported in Appendix C.

III. ANALYSES

This chapter summarizes the results of the quantitative and qualitative analyses conducted by RBS. Evaluation questions 2 through 7, focusing on particular aspects of CBVE, are each answered using the information gathered in this study. As the first evaluation question addresses the overall status of CBVE, it will be answered in the final chapter as part of the summary of the evaluation study findings.

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Interviews

Mean ratings for interview responses for the ten elements were calculated and are reported in Table 9. Individual sub-element ratings are reported in Appendix C.

Table 9

Extent of CBVE Implementation Ratings

BVE Model Element	AVTS[a]	Com. College[b]	HS[c]	All Sites
I. Define scope of course	3.47	3.83	2.85	3.30
II. Validate occupational categories	3.44	3.33	2.71	3.23
III. Identify terminal performance objectives	3.23	3.33	2.56	3.05
IV. Identify sequential performance steps	3.14	3.42	2.40	2.95
V. Resources	3.21	2.87	2.80	3.08
VI. Task sequence	3.03	2.67	3.08	3.02
VII. Assess student performance	2.97	3.33	2.92	2.98
VIII. Student instructional program	3.07	3.00	2.73	2.97
IX. Design learning management system	3.29	3.50	3.23	3.29
X. Conduct course evaluation	2.91	3.14	2.69	2.87
All Elements	3.20	3.24	2.74	3.07

Note. Ratings can vary from a low of 1.00 to a high of 4.00.

[a] $n = 31$.

[b] $n = 2$.

[c] $n = 14$.

Ratings from all three types of schools were generally high. For six of the ten elements, the mean ratings indicated at least "moderate" implementation. The highest overall rating was obtained for the first element, "Define the scope of the course" (mean rating=3.30). In examining the individual sub-element ratings, the CBVE implementers were especially successful in the "Identification and documentation of tentative career objectives for each student" (mean rating=3.59); "Anticipated technological changes in defined occupations are determined from industry and craft committee feedback" (mean rating=3.41); "Occupational tasks for defined occupations approved and documented by craft committee based upon industry needs" (mean rating=3.41); and "Course description written for assigned

VEMIS title based upon D.O.T. occupations and verified by craft committee" (mean rating=3.39). The lowest overall rating was obtained by the tenth element, "Conduct course evaluation" (mean rating=2.87). Low ratings were found for three sub-elements: "Feedback information used to periodically recycle instructor(s) through CBVE implementation process" (mean rating= 2.35); Task list converted to an individual program for each student" (mean rating=2.67); and "Student entry level skills assessed to determine initial instructional placement in program" (mean rating=2.78).

In addition to the ten model elements, the BVE identified eight global programmatic areas for assessing the implementation of CBVE. These included: (1) job analysis as basis for programmatic content, (2) updating programs through craft advisory committees, (3) performance objectives, (4) individualized student programs, (5) clear expectations and evaluation procedures, (6) attainment of competency/mastery, (7) criterion-referenced measures, and (8) credit for prior achievement. In order to address the first six areas, RBS regrouped and examined sub-element ratings from the BVE model. For the final two areas, RBS inserted two items in the site visit interview. The results of these analyses are presented below.

Job analysis for programmatic content. Four sub-elements were identified that relate specifically to job analysis as the basis for programmatic concept. Mean ratings for each sub-element are reported in Table 10 below.

Table 10

Job Analysis for Programmatic Content Sub-Element Mean Ratings

BVE Model Sub-element	AVTS[a]	Community College[b]	HS[c]	All Sites
II-A. V-TECS task lists were reviewed by instructors to identify tasks for defined occupations.	3.58	3.00	2.85	3.34
II-B. Other task lists reviewed by instructor to identify additional tasks for defined occupations.	3.39	3.67	2.85	3.26
II-C. Task lists created for defined occupations where none are currently available.	3.16	3.00	2.31	2.91
X-C. Industry data obtained and used to determine future applicability of course content.	3.32	3.67	3.08	3.28

Note. Ratings can range from a low of 1.00 to a high of 4.00.

[a] $n = 31$.

[b] $n = 2$.

[c] $n = 14$.

Both AVTSs and community colleges have been successful in conducting job analyses to define the content of their vocational programs. Comprehensive high schools have started these analyses, but were not as advanced as the other two types of schools.

Craft advisory committee. In the BVE's model of CBVE, craft advisory committees play a vital feedback role in validating and updating the content of vocational programs. The mean ratings for the seven sub-elements are listed below in Table 11.

Table 11

Craft Advisory Committee Sub-Element Mean Ratings

BVE Model Sub-element	AVTS[a]	Community College[b]	HS[c]	All Sites
I-B. Employment opportunities for defined occupations are projected for 3-5 yrs. from labor market data and craft committee feedback.	3.19	3.67	2.92	3.15
I-C. Anticipated technological changes in defined occupations are determined from industry and craft committee feedback.	3.55	3.67	3.00	3.41
I-D. Course descriptions written for assigned VEMIS title based upon D.O.T. occupations and verified by craft committee.	3.68	3.00	2.75	3.39
II-D. Occupational tasks for defined occupations approved and documented by craft committee based upon industry needs.	3.63	3.67	2.85	3.41
III-D. Performance objective content reviewed with craft committee to determine validity of conditions, performance, and standards.	3.32	3.67	2.69	3.17
IV-D. Performance guide content and sequence for all identified tasks approved and documented by craft committee.	3.19	3.67	2.38	3.00
IV-E. Finalized resource list reviewed and documented by craft committee.	2.97	2.67	2.42	2.80

Note. Ratings can range from a low of 1.00 to a high of 4.00.

[a] $n = 31$.

[b] $n = 2$.

[c] $n = 14$.

Craft committees were used more frequently by the AVTSs and community colleges than by the comprehensive high schools. AVTS craft committees were most involved in approving course descriptions and occupational tasks as well as anticipating technological changes in particular occupations. Community colleges used their craft advisory committees at fairly high levels across all areas except for the review and documentation of resource lists.

Comprehensive high schools did not use their craft committees as extensively as the other two types. High school craft committees were most notably involved in anticipating technological changes in particular occupations, projecting employment opportunities for the next 3-5 years, and approving occupational tasks. They were less involved in approving performance guide content and resource lists.

Performance objectives. The third BVE programmatic area of concern focused on the establishment of sequenced performance objectives for each task. Table 12 presents the mean ratings for the six relevant sub-elements.

Table 12

Performance Objectives Sub-Element Mean Ratings

BVE Model Sub-element	AVTS[a]	Com. College[b]	HS[c]	All Sites
III-A. Performance objectives from appropriate V-TECS catalog(s) identified and reviewed.	3.19	3.00	2.77	3.06
III-B. Performance objectives from other sources identified and reviewed.	3.19	3.67	2.69	3.09
III-C. Performance objectives written for tasks where none are currently available.	3.23	3.00	2.08	2.89
IV-A. Performance guides in V-TECS catalog(s) reviewed for content and sequence.	3.19	3.00	2.69	3.04
IV-B. Performance steps identified and reviewed for content and sequence for tasks not identified in V-TECS catalog.	3.17	3.67	2.38	2.98
IV-C. Performance steps written and sequenced for tasks where none are currently available.	3.00	3.33	2.15	2.79

Note. Ratings can range from a low of 1.00 to a high of 4.00.

[a] $n = 31$.

[b] $n = 2$.

[c] $n = 14$.

Ratings were somewhat lower for performance objectives than for the previous two programmatic concerns. Consistent with the two earlier sets of ratings, AVTSs and community colleges indicated higher degrees of implementation than did comprehensive high schools. All of the AVTS and community college ratings were 3.00 or greater, while the highest rating obtained by high schools was 2.77. High schools, in general, had not yet fully identified performance objectives for each task. High schools also tended to rely more on V-TECS resources than did AVTSs and community colleges.

Individualized student program. Unlike many of the other BVE programmatic concerns, one of the ten CBVE model elements pertains exclusively to this concern. The mean ratings for the four sub-elements and overall element are reported in Table 13.

Table 13

Individualized Student Program Sub-Element and Overall Ratings

BVE Model Sub-element	AVTS[a]	Community College[b]	HS[c]	All Sites
VIII-A. Tentative career objective identified and documented for each student.	3.67	3.50	3.38	3.59
VIII-B. Task list delineated and reviewed with each student for occupation in career objective.	3.00	2.50	2.54	2.85
VIII-C. Student entry level skills assessed to determine initial instructional placement in program.	2.77	3.00	2.77	2.78
VIII-D. Task list converted to an individual program for each student.	2.83	3.00	2.23	2.67
Overall Element	2.91	3.14	2.69	2.87

Note. Ratings can range from a low of 1.00 to a high of 4.00

[a] $n = 31$.

[b] $n = 2$.

[c] $n = 14$.

All three types of schools reported high levels of implementation in identifying career objectives for students. They were less successful in the three other sub-elements. High schools, in particular, had made little progress in tailoring vocational programs to meet individual student needs.

Clear expectations and evaluation procedures. A fifth area of programmatic concern focused on the establishment of well-defined and known performance standards and evaluation procedures. Four sub-elements addressed this programmatic concern.

Table 14

Clear Expectations and Evaluation Procedure Sub-Element Ratings

BVE Model Sub-element	AVTS[a]	Community College[b]	HS[c]	All Sites
VII-A. Performance tests constructed for each objective based upon established standards.	3.10	3.33	2.85	3.04
VII-B. A system to convert performance on objectives to a conventional grading scale (if required) is in place and known to students.	2.84	3.33	3.00	2.91
IX-A. System developed to monitor student progress.	3.29	3.33	3.31	3.30
IX-B. System provides for continuous feedback to the student.	3.29	3.67	3.15	3.28

Note. Ratings can range from a low of 1.00 to a high of 4.00.

[a] n = 31.

[b] n = 2.

[c] n = 14.

Unlike all of the previous programmatic concerns, there was less variance among the AVTS, community college, and high school ratings in terms of expectations and evaluation procedures. All three had developed continuous feedback systems to monitor student progress. Although not necessarily reflected by low ratings, many of the schools expressed concern with the second sub-element - the conversion of performance on objectives to conventional grading scales. Their concern derived from the philosophical incongruity between the two concepts of CBVE mastery and conventional grading systems (i.e., absolute versus relative rankings of student performance). AVTSs were especially troubled by this incongruity, particularly since the feeder high schools require AVTSs to adhere to their conventional grading systems. Clearly, more discussion is warranted on this subject.

Attainment of competency/mastery. One basic tenet of competency-based vocational education is the linking of instruction to student mastery. Students should be assessed at program entry to determine their initial skill level, provided instruction relevant to their career objectives, and then tested at program exit to insure attainment of mastery. Four sub-elements were identified that relate to various aspects of this process. Mean ratings for these sub-elements are reported in Table 15.

Table 15

Attainment of Competency/Mastery Sub-Element Rating

BVE Model Sub-element	AVTS[a]	Community College[b]	HS[c]	All Sites
VII-A. Performance tests constructed for each objective based upon established standards.	3.10	3.33	2.85	3.04
VIII-C. Student entry level skills assessed to determine initial instructional placement in program.	2.77	3.00	2.77	2.78
X-A. Student completion and follow-up data compiled for course revision.	2.87	3.67	2.77	2.89
X-B. On-the-job performance of graduates assessed through employer feedback via local surveys.	2.97	3.00	2.69	2.89

Note. Ratings can range from a low of 1.00 to a high of 4.00.

[a] $n = 31$.

[b] $n = 2$.

[c] $n = 14$.

The ratings for this programmatic concern were fairly mixed. Community colleges tended to report higher levels of implementation than the other two, perhaps because of their more flexible scheduling and credit options. As indicated in the previous discussion, the issue of student competency or mastery is somewhat clouded in AVTSs and high schools because of the need to adhere to conventional grading systems. AVTSs and high schools also are less able to individualize vocational programs; students are expected to enroll and proceed through fairly uniform sequences of courses. Performance tests, on the other hand, are commonly used in all three types of schools. Finally, follow-up employer surveys are fairly difficult and expensive for AVTSs and high schools to undertake; they tend to rely on progress reports from student coop placements prior to graduation for employer feedback.

Given the relative paucity of graduate feedback, there is only sporadic formal use for course revision.

Criterion-referenced measures. During the site visit interview, schools were asked whether criterion-referenced tests were used to assess student performance. Table 16 reports the responses of the 33 visited schools.

Table 16

Use of Criterion-Referenced Tests

Type of School	Use CRTs		Do Not Use CRTs	
	N	Percent	N	Percent
AVTS	18	86	3	14
Com. College	2	100	0	0
HS	7	70	3	30
Total	27	82	6	18

Over four-fifths of the schools used criterion-referenced tests. This trend was evident among the three school types.

Credit for prior achievement. Site visit interviewees were also asked whether their school awarded credit for prior achievement. Table 17 presents their responses.

Table 17

Award Credit for Prior Achievement

Type of School	Credit Awarded		Credit Not Awarded	
	N	Percent	N	Percent
AVTS	4	19	17	81
Community College	2	100	0	0
HS	0	0	10	100
Total	6	18	27	82

This question apparently caused some confusion because state law precludes the award of credit by AVTSs or high schools for prior achievement. More simply, AVTSs and high schools are able to award credit only for course hours earned under their supervision (except for transfer credit). The four AVTSs indicating that they were awarding credit for prior achievement most likely misunderstood the question. Their affirmative response probably refers to the student's placement in the sequence of courses (or competencies). Both community colleges do award credit for prior achievement.

Teacher Surveys

Teacher ratings of the extent of implementation of CBVE in their own classrooms also were obtained using the same procedures described for the interview respondents. Table 18 summarizes their mean ratings for each of the ten model elements. Teacher sub-element ratings are contained in Appendix D.

Table 18

Extent of CBVE Implementation-Teacher Survey

BVE Model Element	Mean Rating			
	AVTS[a]	Community College[b]	HS[c]	All Sites
I. Define scope of course	3.28	3.36	2.59	3.17
II. Validate occupational competencies	2.17	2.23	1.54	2.07
III. Identify terminal performance objectives	3.15	3.18	2.44	3.04
IV. Identify sequential performance steps	2.97	3.14	2.22	2.86
V. Resources	3.07	3.93	2.47	2.97
VI. Task sequence	3.01	3.18	2.42	2.93
VII. Assess student performance	3.23	3.09	3.04	3.20
VIII. Student instructional program	3.02	3.00	2.40	2.92
IX. Design learning management system	3.30	3.18	2.92	3.24
X. Conduct course evaluation	2.81	2.61	2.58	2.77
All elements	3.10	3.10	2.51	3.01

Note. Ratings can vary from a low of 1.00 to a high of 4.00.

[a] $n = 19$.

[b] $n = 1$.

[c] $n = 8$.

Similar patterns of ratings were generally found between the interview and teacher survey responses. AVTS and community college teachers rated their level of implementation higher than did high school teachers. AVTS and community college teachers generally rated their implementation as "moderate;" high school ratings were usually mid-way between "moderate" and "minimal" levels of implementation. CBVE teachers reported highest levels of implementation for "Identify instructional program contents for each student;" "Assess student performance for each objective;" and "Define scope of course." Lowest level of implementation was noted by all teachers for the "Validate occupational competencies" element.

Teacher survey ratings were generally lower than the interview-obtained ratings. In the case of the AVTSs, the mean ratings usually differed by less than a quarter point. At the community college and high school levels, sixty percent of the ratings differed by .30 points or more, with the interview obtained ratings almost always higher. The greatest difference in ratings between the teacher survey and interview ratings was for the "Validate occupational competencies" element across all types of schools. Again, interview-oriented ratings were higher than teacher ratings.

Teacher ratings to the first six of the BVE's programmatic concerns were also examined. Teachers were not asked whether criterion-referenced tests were used to assess student performance or whether credit was awarded for prior achievement. Although teacher ratings to the individual sub-elements were lower than the interview-obtained ratings, there were no major differences between the two sets. Appendix D presents the sub-element ratings by programmatic concern.

Characteristics of Other CBVE Models

In order to answer this question, RBS relied on data gathered during interviews of key PDE officials and senior personnel of AVTSs, community colleges, and high schools. The pattern of use of the state's model versus other models varied depending on the type of school.

All 31 AVTSs in the current study implementing CBVE followed the state's ten element model. These schools relied heavily on state resources, materials, and technical assistance to develop their CBVE programs and thus their programs reflect the state's model.

At the community college level, use of the state model was mixed. One of the three is following the state's model of CBVE. At the other two

colleges, the basic tenets generic to CBVE were followed (e.g., perfor performance-based, individually paced, tasks analyses, measurable objectives, criterion-referenced measurement, and continuing curriculum updates from the field). However, unlike the state model that focuses on competencies for particular occupations, the two community colleges organized their competencies by broader skill or career area. They felt that this grouping provided more flexibility and better met the needs of post-secondary students. Except for this organizational difference, there was little difference between the state and community college model.

The results for the 13 comprehensive high schools paralleled those for the community college. Approximately 60 percent of the high schools were following the state model. In the remaining 40 percent, the schools endorsed the basic tenets of CBVE, but tended to organize their curriculum by vocational skill or career area rather than particular occupational competencies. It should also be noted that when many of the high schools responded affirmatively to the RCU implementation survey, they were really only endorsing the concept of competency-based education at a very global level. During the RBS survey, it became clear that these schools had not yet taken the initial steps to incorporate any of the common CBVE elements into their program. There is a very general level of acceptance of CBVE in almost all high school vocational programs across the state; however, the application of CBVE program elements is not as far advanced.

PDE Funding Strategy

The fourth evaluation question addressed the impact of PDE funding on the implementation of CBVE. PDE funded workshops, technical assistance, materials, and curriculum coordinator positions to support this effort;

however, only the curriculum coordinators represented a large-scale investment from the state to the local educational agency and so is the major source of data for this question.[2] In order to assess the impact of PDE funding, CBVE implementation in LEAs with and without state-funded curriculum coordinator positions were compared.

Impact of Curriculum Coordinator Funding

More specifically, CBVE implementers were divided into the above two groups. There were 11 LEAs with curriculum coordinators (10 AVTSs and 1 high school) and 36 LEAs without coordinators (21 AVTSs, 3 community colleges, and 12 high schools). Interview respondents were asked to rate the effectiveness of the curriculum coordinators in facilitating the implementation of CBVE in their schools. The mean rating of the eleven respondents was 3.36, indicating that, as a group, the curriculum coordinators were at least "moderately effective."

Table 19 presents the extent of implementation ratings for the ten CBVE model elements for the LEAs with and without curriculum coordinators. The ratings were obtained from both site visit and telephone interviews. Appendix F presents the individual sub-element ratings. Independent "t"- tests were conducted to determine if there were significant differences in the extent ratings between the two groups of LEAs. CBVE implementers with or without curriculum coordinators differed significantly on six of the ten model elements. Five of these elements pertained specifically to the

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[2] PDE funded some staff development programs for individual or very small groups of LEAs, however it is impossible to determine the impact of these programs because of their small and isolated number. Appendix E reports on the types of funds received.

Table 19

Extent of Implementation Ratings-
LEAs With and Without Curriculum Coordinators

Element	Mean Rating		"t" Value
	With Curriculum Coordinators[a]	Without Curriculum Coordinators[b]	
I. Define scope of course	3.75	3.16	4.28**
II. Validate occupational categories	3.68	3.10	3.40**
III. Identify terminal performance objectives	3.57	2.90	3.39**
IV. Identify sequential performance steps	3.36	2.83	2.30*
V. Resources	3.60	2.92	4.49**
VI. Task sequence	3.27	2.94	1.03
VII. Assess student performance	3.18	2.92	1.17
VIII. Student instructional program	3.00	2.97	1.00
IX. Design learning management system	3.77	3.14	3.18**
X. Conduct course evaluation	3.15	2.78	1.74
Overall	3.46	2.96	3.19**

Note. Ratings can vary from a low of 1.00 to a high of 4.00.

[a] $n = 11$.

[b] $n = 36$.

*$p < .05$

**$p < .01$

identification or delineation of occupational competencies and performance objectives. Three of the four statistically non-significant comparisons focused on either evaluation (student and course) or individualized student programs. These concepts are key ingredients to a vast number of programs and thus were less likely to be influenced by the presence of a curriculum coordinator. These results support the positive influence of PDE-funded curriculum coordinators on CBVE implementation.

Training and Technical Assistance Received

PDE also provided assistance to LEAs to meet needs in implementing CBVE through its support of training and technical assistance. As noted in the preceding chapter, many of the respondents were unclear about the specific details regarding the assistance received (e.g., sponsor, content of training). In addition, the data collection instruments were formatted so that respondents were asked to list assistance they had received rather than provided with a list of possible training or technical assistance for them to check. As a result of these two factors, the interview respondent and teacher listings reported in Tables 20 and 21, respectively, are most likely incomplete and perhaps sometimes inaccurate. Responses for the two questions within each type (i.e., AVTS, community college, or high school) have been aggregated and reported together because of the lack of clarity and overlap across items (e.g., Item 5-training or technical assistance received related to CBVE and Item 6-other PDE support to facilitate CBVE).

In general, the interview results indicated that the three most frequently received resources were university-based programs on CBVE, V-TECS training or materials, and in-service programs sponsored by the LEAs themselves. RBS suspects that the number of education agencies receiving V-TECS training or materials is a conservative estimate in that all of the AVTSs implementing CBVE used V-TECS materials in their development of competencies, etc. None of the other obtained data seem as dramatically off the mark.

Table 20

Type and Frequency of Assistance Received-Interview Respondents

Type of Assistance Received	AVTS[a]		Com. College[b]		HS[c]		All Sites	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
University programs (at Millersville State, Penn State, Shippensburg State, Temple, University of Pittsburgh)	21	68	3	100	3	23	27	57
V-TECS training or materials	14	45	3	100	2	15	19	40
IU-sponsored workshops	2	7	0	0	2	15	4	9
Visits to exemplary sites	2	6	0	0	1	8	3	6
PDE Regional Office-sponsored workshops	2	6	0	0	0	0	2	4
Educational agencies internally-sponsored in-service programs	16	52	1	33	7	54	24	51
Curriculum development assistance from PDE (e.g., Frank Rozman)	3	10	1	33	2	15	6	13
Periodic monitoring, evaluation, and feedback from PDE	1	3	0	0	0	0	1	2
Unsure of specific training received	14	45	1	33	3	23	18	38
No assistance provided	1	3	0	0	1	8	2	4

[a] $\underline{n} = 31$.

[b] $\underline{n} = 3$.

[c] $\underline{n} = 13$.

Table 21

Type and Frequency of Assistance Received-Teachers

Type of Assistance Received	AVTS[a]		Com. College[b]		HS[c]		All Sites	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
University programs (at Millersville State, Penn State, Shippensburg State, Temple, University of Pittsburgh)	80	29	3	27	7	12	90	26
V-TECS training or materials	9	3	0	0	0	0	9	3
IU-sponsored workshops	2	1	0	0	0	0	2	1
Visits to exemplary sites	0	0	0	0	0	0	0	0
PDE Regional Office-sponsored workshops	0	0	0	0	0	0	0	0
Educational agencies internally-sponsored in-service programs	108	39	4	36	11	19	123	35
Curriculum development assistance from PDE (e.g., Frank Rozman)	0	0	1	19	0	0	1	1
Periodic monitoring, evaluation, and feedback from PDE	0	0	0	0	0	0	0	0
Unsure of specific training received	44	16	0	0	7	12	51	15
No assistance provided	84	30	3	27	38	64	125	36

[a] $n = 278$.

[b] $n = 11$.

[c] $n = 59$.

The teacher survey results generally confirmed the interview responses. Assistance was received by teachers most often from either LEA-sponsored in-service programs or university-based programs. As with the interview set of data, few teachers acknowledged V-TECS training or materials although most reported using V-TECS materials in their shops. Thirty-seven percent of the teachers reported that they had received no assistance.

Needs of Educational Agencies Related to CBVE

This evaluation question examines whether the needs of educational agencies related to CBVE have been met by the PDE. In order to determine whether the needs of schools have been met, it is important to first understand what vocational program needs were present within the state. RBS thus asked the 33 site interview schools to answer contextual questions concerning program needs CBVE was expected to address, reasons for adopting CBVE, and the goals and objectives of their CBVE programs. Interview and survey respondents were then asked to list the training and technical assistance they received from PDE and other groups to help meet CBVE implementation needs; these were reported in the previous section (see Tables 20 and 21). Finally, respondents were asked to identify their plans for the continued implementation of CBVE as well as any outstanding needs.

Vocational Program Needs

The 33 site visit schools were asked to list the most important vocational program need CBVE was expected to address. Their responses are reported in Table 22.

Table 22

Program Needs CBVE Expected to Address

Program Needs	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Individualize instruction	7	33	0	0	2	20	9	27
Ensure student acquisition of skills	5	24	1	50	4	40	10	30
Provide coherent curriculum hierarchy of learning	2	10	1	50	1	10	4	12
Keep shops up-to-date	1	5	0	0	1	10	2	6
Increase accountability	3	14	0	0	1	10	4	12
Unsure	3	14	0	0	1	10	4	12

[a] n = 21.

[b] n = 2.

[c] n = 10.

Approximately one-third of the respondents reported that CBVE was expected to ensure student acquisition of skills. Another 27 percent believed the model would facilitate the individualization of instruction. Over half of the program needs listed by respondents dealt with the broad issue of accountability.

All CBVE implementers were asked why their schools had implemented CBVE. Table 23 summarizes their reasons for adoption. Multiple reasons were given by some of the AVTSs.

Table 23

Reasons for Adoption of CBVE

Reason	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
New model recommended by state	12	39	0	0	2	15	14	30
Monitor/improve student acquisition of skills	3	10	2	66	4	31	9	19
Administrative decision/ prerogative	6	19	0	0	4	31	10	21
Revise curriculum	4	13	0	0	0	0	4	9
Better approach to individualize instruction	2	6	1	33	0	0	3	6
Required by state	5	16	0	0	1	8	6	13
CBVE always used at school	2	6	0	0	0	0	2	4
Unsure	0	0	0	0	2	15	2	4

[a] $n = 31$.

[b] $n = 3$.

[c] $n = 13$.

Many of the reasons given by respondents paralleled the earlier question related to program needs. Clearly, the state's emphasis on CBVE played a critical role in the adoption by AVTSs. At community colleges and high schools, the improvement of student skill development was more important.

As a final contextual question related to needs, RBS asked the 33 site visit schools to identify goals and objectives of their CBVE programs. Twenty of the AVTSs identified one overall goal, the other AVTS listed two. Their responses are reported in Table 24.

Table 24

CBVE Goals and Objectives

Goals and Objectives	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Prepare students to enter the job market	8	38	1	50	4	40	13	39
Help students to obtain full potential	8	38	1	50	3	30	12	36
Meet state requirements	0	0	0	0	1	10	1	3
Relate student competencies to actual employment	3	14	0	0	0	0	3	9
Increase accountability	3	14	0	0	1	10	4	12
Unsure	0	0	0	0	1	10	1	3

[a] n = 21.

[b] n = 2.

[c] n = 10.

The two most frequent responses (across all sites) were to prepare students to enter the job market and help students to obtain their full potential.

PDE Response to Schools' CBVE Needs

In order to determine if PDE had met schools' needs related to CBVE, RBS compared the vocational program needs CBVE was expected to address (as listed in Tables 22, 23 and 24) to the assistance provided by PDE and other agencies (listed in Tables 20 and 21). It's clear that the training and assistance received by all of the educational agencies was responsive to their needs. Training, technical assistance, and the curriculum coordinators all aided the implementation of competency-based vocational education to individualize instruction, ensure student acquisition of skills, and provide a coherent hierarchy for student learning. With the decrease in assistance available to educational agencies and the passage of time, new

needs have developed. As a result, the state did initially meet the broad range of needs of educational agencies in implementing CBVE. However, as evident in the following section, educational agencies now have outstanding needs that are not being met.

CBVE Outstanding Needs and Plans

Interview respondents and teachers were asked to list their outstanding needs related to CBVE implementation. Many listed more than one. Tables 25 and 26 summarize their respective responses.

Site visit interview respondents identified the updating and expansion of the CBVE curriculum and staff development for both new and experienced staff as their greatest needs. Approximately 20 percent of the schools reported no outstanding needs. Sizeable numbers of CBVE teachers (especially at community colleges and high schools) also reported that they had no outstanding needs. For those teachers that did, the majority of needs centered on either the daily routines of schooling (e.g., preparation time, quality and quantity of instructional materials) or updating the curriculum or facilities. The continual updating of CBVE curriculum is clearly a significant concern of AVTSs where both administrator and teacher understanding of CBVE is greatest.

Table 25

Outstanding Needs of CBVE Program

Outstanding Needs	AVTS[a]		Com. College[b]		HS[c]		All Sites	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Update, expand, or improve curriculum	13	62	1	50	3	30	17	52
Provide staff development for new and experienced staff	10	48	2	100	4	40	16	48
Improve shop facilities	3	14	0	0	1	10	4	12
Funding for curriculum coordinator position	4	19	0	0	0	0	4	12
Other	6	29	2	100	1	10	9	27
None	3	14	0	0	3	30	6	18

[a] $n = 21$.

[b] $n = 2$.

[c] $n = 11$.

Table 26

Outstanding Needs of CBVE Teachers

Outstanding Needs	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Update, expand, or improve curriculum	30	11	1	9	1	2	32	9
Provide staff development for new and experienced staff	15	5	0	0	5	8	20	6
Improve shop facilities	29	10	1	9	1	2	31	9
Increase teacher preparation time	38	14	0	0	0	0	38	11
Improve quality and quantity of instructional materials	56	20	0	0	1	2	57	16
Materials and strategies for dealing with special need students	20	7	0	0	1	2	21	6
Other	10	4	0	0	2	3	12	3
None	116	42	9	82	49	83	174	50

[a] n = 278.

[b] n = 11.

[c] n = 59.

The 33 site visit schools were asked to list their anticipated needs and plans for continued CBVE implementation. A few identified multiple plans. Table 27 presents the information on their plans.

Table 27

Future CBVE Plans

Future Plans	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Continue implementing as is	9	43	1	50	7	70	17	52
Expand CBVE to additional vocational areas	6	29	1	50	1	10	8	24
Begin implementing CBVE by next school year in actual instructional program	1	5	0	0	1	10	2	6
Expand competency testing program	1	5	0	0	0	0	1	3
Revise dated programs	2	10	0	0	1	10	3	9
Cluster vocational programs	1	5	0	0	0	0	1	3
Standardize curriculum	1	5	0	0	0	0	1	3
None	2	10	0	0	1	10	3	9

[a] n = 21.

[b] n = 2.

[c] n = 10.

Approximately half intended to continue their current implementation of CBVE. Another fourth hoped to expand CBVE to additional vocational areas. It is interesting to note that over 80 percent of the interview respondents identified outstanding needs related to CBVE, yet approximately half reported that their schools intended to continue implementing CBVE in its current form.

Correlates of Successful CBVE Implementation

The educational change literature clearly identifies factors that contribute to the successful adoption of new programs. In order to determine correlates of successful CBVE implementation, all interview and survey respondents were asked to identify factors that either influenced

their adoption of CBVE (CBVE implementers) or their decision not to adopt CBVE (non-CBVE implementers). Each set of data is discussed below.

CBVE Implementers

Interview respondents were asked to rate the extent to which eight factors influenced the adoption of CBVE at their schools. The eight factors were drawn from the educational change literature (Corbett, Dawson, and Firestone, 1984). Table 28 summarizes the mean ratings by type of school.

Table 28

Factors that Contributed to Schools' Decision to Adopt CBVE

Factor	AVTS[a]	Community College[a]	HS[c]	All Sites
Administrative support of CBVE	4.21	4.33	4.27	4.23
Faculty support of CBVE	3.79	4.00	3.82	3.81
Practicality and/or utility of CBVE in the classroom	3.90	4.00	4.18	3.98
Perceived importance of CBVE in meeting vocational education program needs	4.11	4.67	4.18	4.17
Faculty orientation, training, and technical assistance	4.00	4.00	3.64	3.90
Faculty planning and preparation time before actual implementation of CBVE	3.36	3.33	3.45	3.38
Availability of necessary resources	3.86	4.00	3.64	3.81
Opportunity for faculty input and autonomy in the implementation of CBVE	4.11	4.33	3.82	4.05

Note. Ratings can range from a low of 1.00 to a high of 5.00.

[a] n = 31.

[b] n = 2.

[c] n = 14.

All eight factors were rated as positive influences by the interview respondents. The most important factor across all schools was administrative support for CBVE. Somewhat surprisingly, the least important factor was

Table 29

Facilitating and Detracting Factors - CBVE Implementers

Factors	AVTS[a]		Com. College[b]		HS[c]		All Sites	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Facilitated								
Characteristics of CBVE instructional model	3	10	1	33	1	8	5	11
State leadership and technical assistance	4	13	0	0	3	23	7	15
Motivated, enthusiastic school staff	4	13	0	0	0	0	4	9
School administrative leadership	6	19	0	0	0	0	6	12
Strong community or industry support	3	10	0	0	1	8	4	9
Availability of resources and materials	3	10	0	0	1	8	4	9
CBVE training already initiated in some areas	4	13	0	0	0	0	4	9
Funds from state or federal government	3	10	1	33	0	0	4	9
Other	0	0	1	33	0	0	1	2
None listed	7	23	1	33	8	62	16	34
Detracted								
Insufficient development funds	13	42	0	0	4	31	17	36
Faculty resistance to change	8	26	2	66	1	8	11	23
Length of development time	4	13	0	0	1	8	5	11
Lack of state leadership	3	10	0	0	2	15	5	11
Limited access to CBVE expertise	6	19	0	0	0	0	6	13
Quantity of paperwork	8	26	0	0	1	8	9	19
Other	5	16	2	66	0	0	7	15
None	4	13	0	0	7	54	0	0

[a] $n = 31$.

[b] $n = 3$.

[c] $n = 13$.

faculty planning and preparation time before actual implementation of CBVE. However, it should be noted that interview respondents tended to be senior level administrative personnel.

Interview respondents were also asked to identify other factors that especially facilitated or detracted from their schools' adoption of CBVE. As indicated in Table 29, five of the eight respondent-listed facilitative factors reinforced the eight factors identified by RBS. Other factors included state leadership and technical assistance, motivated and enthusiastic school staff, and strong community and industry support. Interview respondents also identified factors that detracted from their schools' adoption of CBVE. Included in these factors were insufficient development funds, faculty resistance to change, and the quantity of paperwork required to implement CBVE.

Teachers implementing CBVE were also asked to rate the influence of the eight literature-identified factors plus two others. Their ratings are presented in Table 30.

Table 30

Factors that Facilitated CBVE Adoption by Teachers

Factor	AVTS[a]	Community College[b]	HS[c]	All Sites
Administrative support of CBVE	4.14	4.40	3.59	4.09
Faculty support of CBVE	3.51	3.70	3.34	3.50
Practicality and/or utility of CBVE in the classroom	3.87	4.20	3.41	3.83
Perceived importance of CBVE in meeting vocational education program needs	3.98	4.40	3.57	3.95
Faculty orientation, training, and technical assistance required	3.77	3.60	3.17	3.70
Faculty planning and preparation time needed before actual implementation of CBVE	3.44	3.50	3.13	3.41
Availability of necessary resources	3.54	3.30	3.32	3.51
Opportunity for faculty input and autonomy in the implementation of CBVE	3.64	3.80	3.45	3.63
PDE support for CBVE	3.59	3.43	3.33	3.56
Local advocate for CBVE	3.45	3.78	2.97	3.40

Note. Ratings can vary from a low of 1.00 to a high of 5.00.

[a] n = 278.

[b] n = 11.

[c] n = 59.

As with the interview respondents, all eight were seen as positive influences. However, except for faculty planning and preparation time, teacher ratings tended to be somewhat lower. Teachers also rated PDE support and a local advocate for CBVE as positive forces. Teachers rated administrative support for CBVE as the most positive influence and a local CBVE advocate as the least important of all the factors.

Teachers were also asked to identify other factors that facilitated or detracted from their adoption of CBVE. Their responses are reported in Table 31.

Table 31

Facilitating and Detracting Factors-CBVE Teachers

Factor	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Facilitated								
Administrative support	14	5	0	0	0	0	14	4
Features of CBVE model	49	18	2	18	5	8	56	16
Training available	14	5	0	0	1	2	15	4
Availability of resources	5	2	0	0	1	2	6	2
Craft committee/community support	8	3	1	9	0	0	9	3
Other	40	14	1	9	5	8	46	13
None	151	54	7	64	47	80	205	59
Detracted								
Amount of time required	49	18	2	18	5	8	56	16
Wide range of student abilities and skills	29	10	0	0	0	0	29	8
Lack of materials or equipment	15	5	1	9	2	3	18	5
Other	33	12	0	0	3	5	36	10
None	156	56	8	73	49	83	213	61

[a] n = 278.
[b] n = 11.
[c] n = 59.

The majority of teachers did not identify any other factors that facilitated or detracted from their adoption of CBVE. The responses of those that did tended to repeat many of the research-identified factors as contributing to their successful adoption. They also identified craft committee and community support as a positive influence. Detracting factors focused on the amount of development time and the lack of needed materials and equipment. Teachers additionally found the wide variety of student ability levels and skills problematic in their implementation of CBVE.

Non-CBVE Implementers

In addition to surveying CBVE implementers, RBS opted to survey non-CBVE implementers to determine factors that contributed to their decision

not to implement the model. Identifying these factors might help to more clearly delineate conditions under which schools will decide to adopt CBVE.

Non-CBVE implementer interview respondents were asked to list factors that were influential in their decision making. Table 32 presents their responses.

Table 32

Factors that Contributed to Schools' Decisions Not to Adopt CBVE

Factor	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Development time	1	33	0	0	1	4	2	7
Limited vocational programs	1	33	0	0	1	4	2	7
Other	1	33	1	100	5	21	7	25
None	0	0	0	0	19	79	19	68

[a] n = 3.
[b] n = 1.
[c] n = 24.

Length of development time, limited vocational programs, and related concerns prohibited the three AVTSs from undertaking adoption of CBVE. A majority of the high schools reported little or no knowledge of CBVE and thus made no conscious decision to adopt or not adopt.

Student Impacts of CBVE

Up to now, the state has not initiated any formal evaluation of student outcomes of CBVE. In order to determine whether any evidence exists, RBS asked key PDE officials and CBVE implementers (both senior level personnel and teachers) if they had gathered any evaluation data. No data were gathered by PDE officials. Tables 33 and 34, respectively, report on student outcomes cited by site interview respondents (senior administrators) and teachers.

Table 33

Student Impact Cited by CBVE Programs

Evaluation Information	AVTS[a]		Community Col.[b]		HS[c]		All Sites	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Increase in percentage of students successfully completing program requirements	1	5	0	0	1	10	2	6
Decrease in student attrition from vocational education program	2	10	0	0	2	20	4	12
Improved student grades	2	10	0	0	1	10	3	9
Improved student attendance/decrease in student absenteeism	2	10	0	0	1	10	3	9
Improved student attitudes	5	24	1	50	2	20	8	24
Increase in percentage of students placed in voc. ed. program-related positions following graduation	3	14	1	50	3	30	7	21
Increase in industry support and communication	6	29	1	50	0	0	7	21
Other	6	29	2	100	2	20	12	36
None	13	62	0	0	6	60	19	58

[a] $n = 21$.

[b] $n = 2$.

[c] $n = 10$.

Table 34

Student Impact Cited by Teachers

Source	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Increase in percentage of students successfully completing program requirements	68	25	5	46	12	21	85	25
Decrease in student attrition from vocational education program	25	9	4	36	9	16	38	11
Improved student goals	67	25	3	27	12	21	82	24
Improved student attendance/ decrease in student absenteeism	50	18	3	27	10	18	63	19
Improved student attitudes	56	21	3	27	12	21	71	21
Increase in percentage of students placed in voc. ed. program-related positions following graduation	75	28	3	27	11	20	89	26
Increase in percentage of students placed in further training programs	69	25	0	0	13	23	82	24
Other	9	3	0	0	2	4	11	3

[a] n = 278.

[b] n = 11.

[c] n = 59.

Although the majority of respondents felt that CBVE had impacted positively on students (e.g., increased levels of competency, more positive attitudes), respondents had gathered little data to support their assertions. Some schools had collected follow-up data, but had no baseline or control group to use as a comparison to document CBVE impacts. There does not appear to be any substantial data set to support the positive effects of CBVE on students.

Policy Recommendations

The site visit interview respondents and teachers were asked to suggest CBVE policy recommendations for their school and the state. Tables 35 and 36, respectively, summarize the two groups' recommendations.

Table 35

CBVE Policy Recommendations-CBVE Implementers

Policy Recommendation	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
School Level								
Increase resources and funding support	5	24	0	0	3	30	8	24
Continue implementation as is	2	10	0	0	1	10	3	9
Provide additional training	2	10	0	0	0	0	2	6
Other	0	0	0	0	3	30	3	9
None	12	57	2	100	3	30	26	79
State Level								
Provide more resources	11	52	0	0	2	20	13	39
Incorporate CBVE into teacher education programs	8	38	0	0	0	0	8	24
Identify exemplary sites for schools to visit	5	24	0	0	0	0	5	15
Adopt more clear policy on CBVE	4	19	1	50	2	20	7	21
Develop CBVE model more finely	3	14	2	100	0	0	5	15
Evaluate impacts of CBVE	3	14	0	0	1	10	4	12
Other	2	10	0	0	1	10	3	9
None	2	10	0	0	4	40	6	18

[a] n = 21.

[b] n = 2.

[c] n = 10.

Table 36

CBVE Policy Recommendations-CBVE Teachers

Policy Recommendation	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
School Level								
Increase resources and funding support	82	29	1	9	3	5	86	25
Continue implementing as is	8	3	1	9	2	3	11	3
Provide additional training	18	6	0	0	3	5	21	6
Other	44	16	0	0	5	25	59	17
None	139	50	9	82	46	78	194	56
State Level								
Provide more resources	52	19	0	0	2	3	54	15
Incorporate CBVE into teacher education programs and other training programs	15	5	0	0	0	0	15	4
Identify exemplary sites for schools to visit	7	3	0	0	2	3	9	3
Adopt more clear policy on CBVE	24	9	1	9	4	7	29	8
Develop CBVE more finely	7	3	1	9	0	0	8	2
Evaluate impacts of CBVE	3	1	0	0	0	0	3	1
Other	27	10	2	18	5	8	34	10
None	162	58	7	64	46	78	215	62

[a] $n = 278$.

[b] $n = 11$.

[c] $n = 59$.

In terms of the school level, the majority of interview respondents and teachers made no recommendations. Those who did offer recommendations tended to focus their suggestions on increases in resources, funding, and staff development. This same pattern was reflected in the state level recommendations of both groups. Other state level recommendations included the identification of exemplary sites for schools to visit, more clearly

defined state policies on CBVE, continued development of the CBVE model, and evaluation of CBVE impacts. Although not specific to CBVE, numerous respondents also suggested that the state address conflicts between Chapters 5 and 6 (minimum high school graduation requirements versus number of vocational hours required per credit).

IV. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter is to sort through all of the information presented in the previous chapters to draw the major conclusions of the evaluation study. The conclusions are organized and discussed within the study's evaluation questions in order to provide concise and direct answers to policy makers regarding competency-based vocational education in Pennsylvania. Recommendations derived from the study are generally provided at the end of the conclusions for individual evaluation questions.

Overall Status of CBVE in Pennsylvania

Based on interviews throughout Pennsylvania of school personnel representing 75 AVTSs, community colleges, and comprehensive high schools, it is clear that there is widespread support for competency-based vocational education. The concept of tying vocational education to subsequent employment competencies appears to be readily supported by almost all vocational educators.

There is less clear understanding and support for the BVE's specific CBVE initiative. While all AVTS personnel were knowledgeable of the Bureau's effort, few community college and high school personnel were aware of the state initiative. Their endorsements and implementations of CBVE were more often based on the conceptual appeal of CBVE and not a response to any state model or policy.

The BVE's model of CBVE has achieved a moderately high level of implementation at the AVTSs. This level of implementation was due in large part to the PDE funding of curriculum coordinator positions and the provision of training, technical assistance, and other resources (e.g., V-TECS).

However, with the passage of time and the decrease in both student enrollments and funding for local vocational programs, the AVTSs have not kept pace with the changing job market trends and resulting curriculum and facility modifications and additions.

Numerous policy changes not related to CBVE also have burdened AVTS programs with other problems. The admission of special needs students has increased the heterogeneity of student ability levels, and instruction has become more complicated. AVTS personnel expect Chapters 5 and 6 to impact negatively on the long-term viability of their programs.

At the community college level, vocational education is in a much different context. Many of its vocational-oriented programs are competency-based because of state licensing or certification requirements. Students are more mature and job-oriented, and so there has been an ongoing emphasis on competency-based vocational education independent of the state's effort.

High schools lag behind both AVTSs and community colleges in their implementation of competency-based vocational education. Although supportive of the concept of CBVE, many of the high school personnel interviewed by RBS clearly were unaware of the state's effort. These vocational programs faced many of the same problems as the AVTSs, but were less likely to focus on terminal vocational training, and so perhaps did not merit the same attention from the state. Nevertheless, almost all of the high school programs could benefit from elements in the CBVE model (e.g., performance-based, individually-paced, and criterion-referenced assessment).

Rather than present global recommendations concerning the overall status of CBVE, RBS has developed recommendations that relate to specific aspects of CBVE. These recommendations are presented in terms of the other seven evaluation objectives (questions) that follow.

Implementation of BVE's Model of CBVE

The BVE's model of CBVE was implemented by a majority of the schools involved in the RBS study. In order to examine the implementation of the Bureau's model more finely, eight common programmatic concerns were identified. Results indicated that four of the eight were extensively implemented: job analysis as a basis for programmatic content, updating programs through craft advisory committees, clear expectations and evaluation procedures, and use of criterion-referenced measures to assess student performance. Slightly lesser levels of implementation were found for three other programmtic concerns: performance objectives, individualized student programs, and attainment of competency/mastery. Relatively low levels of implementation were found for the final programmatic concern - credit for prior achievement. As noted above, relatively higher levels of implementation were found for the AVTSs and the community colleges than for the comprehensive high schools.

Recommendation 1. Develop a more description policy on the essential elements of the BVE's model of CBVE.

At the present time, the BVE's ten element model has been followed more faithfully by the AVTSs than by the community colleges and comprehensive high schools. However, in many cases, some of the essential elements of competency-based vocational education are absent. The Bureau's original ten element model essentially represented a process, or step-by-step recipe for developing a CBVE program. As noted in the first chapter of this report, the BVE has moved from a research and development stage to a dissemination and utilization stage in its emphasis on CBVE. In order to keep pace with this change, the BVE should redefine its model to reflect essential

elements that it expects to appear in all vocational programs across the state. In redefining its model, the BVE should pay close attention to currently known differences across the three types of schools (i.e., occupational competencies versus subject area competencies) so there can be common guidelines across the state and between secondary and post-secondary programs.

Characteristics of Other CBVE Models

Almost all (31 of 33) of the study's AVTSs implemented the BVE's CBVE model. At the community college and high school levels, the use of the state model was less consistent. In those instances where the Bureau's model was not followed (2 of 3 community colleges and 5 of 13 comprehensive high schools), the basic tenets of CBVE were followed (e.g., performance-based, individually paced, task analyses, criterion-referenced assessment). However, unlike the state model that focuses on competencies for particular occupations, these schools organized their competencies by broader skill or career areas. They felt that this organizational pattern provided more flexibility and better met the needs of their students. No specific alternative model competing with BVE's was identified.

Recommendation 2. Develop a clearer policy on the application of the BVE's model of CBVE to community colleges and comprehensive high schools.

Up to now, the state has directed most of its limited resources to AVTS vocational programs. High schools and community colleges have not been excluded, but also have not received much attention. As a result, few of the community colleges and high schools included in the study had much knowledge about the state's efforts. Due to the nature of many community

college programs (i.e., health programs requiring state license or certification), their efforts have occurred independently.

The scope of vocational education in high schools is admittedly more limited than in AVTSs. In some areas, the high school programs are not seen as terminal occupational training and so instruction oriented to occupational competencies may be less relevant. However, many of the basic tenets of CBVE are still relevant. In other areas, where students do not go on to further post-secondary training, the BVE's CBVE model has even more relevance. The state should develop clearer guidelines and expectations on the application of CBVE to both high schools and community colleges and, if necessary, provide appropriate resources to support this policy.

PDE Funding Strategy

PDE has funded a wide variety of workshops, technical assistance, and materials to support the implementation of CBVE. The funding of the curriculum coordinator positions, made available almost exclusively to the AVTSs, was particularly important. In order to assess the impact of this funding strategy, the extent of CBVE implementation ratings were compared for schools with and without curriculum coordinators. Statistical analyses clearly demonstrated that schools with curriculum coordinators surpassed schools without coordinators in their implementation of CBVE, especially for those model elements closely related to the delineation of occupational competencies and performance objectives. The state has recently begun funding exemplary program dissemination efforts. These initiatives are intended to continue and extend the Bureau's effort by publicizing and disseminating exemplary vocational programs. It is too early to judge the degree of success of this initiative.

Recommendations concerning future PDE funding strategies are obviously tied to the needs of educational agencies. These recommendations will be presented in conjunction with the recommendations in the next section concerning the outstanding needs of LEAs.

Needs of Educational Agencies Related to CBVE

In adopting CBVE, schools were concerned primarily with obtaining the necessary resources to support both staff and materials development. The BVE initially provided extensive resources to support this effort; especially noteworthy was the funding of curriculum coordinator positions on a three-year, decreasing-support basis. The state's original premise was to withdraw support gradually as the programs became more established; local educational agencies were expected to assume continuing costs as part of their ongoing vocational program budgets. With the decline in secondary school enrollments and increase in graduation requirements, vocational program budgets have decreased. CBVE development and support funds (e.g., release time for revising curriculum) have been cut drastically and many of the CBVE implementers readily acknowledge the pressing need to update and modernize both their curricula and facilities.

Unfortunately, CBVE is not a static and intact program. It requires constant updating to ensure that student competencies closely match employer expectations. In addition, technological advances in some vocational areas require significant curriculum modifications on a continuing basis. Almost all of the outstanding needs of CBVE implementers thus relate to increasing local and state resources for program development.

Recommendation 3. Provide state funds to consortia of schools to modernize curriculum and/or develop programs for high technology areas.

CBVE development funds have declined at the state and local levels. In many instances, development funds should be covered by local funds as part of their ongoing program expenses. It should not be the state's responsibility to fund ongoing, annual course revisions in any school program, including vocational education. However, there are some areas in which state support should legitimately be available. As noted above, extensive technological advances have occurred in numerous vocational areas. In addition, many new high technology occupations have developed. In these two areas, the state should support development. In order to maximize the use of limited resources, the state should fund consortia of schools (such as the earlier highly successful consortium of the Reading-Muhlenberg AVTS, the Schuylkill County AVTS, and the Berks County AVTS) to undertake and complete this work. Their products should be disseminated statewide. Minor revisions and modifications can then be made at the individual school level to reflect regional differences.

Recommendation 4. Revise vocational education teacher certification requirements to include coursework on CBVE.

Many of the evaluation study respondents noted the need for staff development on CBVE, especially for new teachers. If the Bureau plans to continue its emphasis on CBVE, state teacher preparation programs should provide intensive coursework on the model. Particular attention should be given to building teacher candidates' understanding of CBVE as a cyclical process and not simply as a curriculum organizational plan.

Correlates of Successful CBVE Implementation

The current study confirmed results of previous studies on educational change. Most important in the implementation of CBVE was administrative support, provision of resources for staff development and material development, and the presence of an on-site advocate (curriculum coordinator) to promote and support the development effort.

Recommendation 5. Design and review future vocational education initiatives to ensure that administrative support, sufficient resources, and other key educational change elements are present as part of the development effort.

Major revisions have been made over time in the state's CBVE initiative in order to meet the needs of LEAs undertaking this development. For example, when the state's early off-site staff development workshops did not produce sufficient carryover in the training of staff and development of curriculum at the individual AVTSs, the BVE allocated funds for curriculum coordinators who were given responsibility for spearheading local school efforts. This modification was in concert with R&D knowledge on the school change process. The BVE should be sure that all future efforts are part of a long-term plan that is responsive to LEA needs and builds on R&D findings related to school change.

Positive Student Impacts

There was almost universal agreement on the positive impacts of CBVE on students as well as many other groups (e.g., teachers, industry, and community). In spite of widespread praise, there is no real evidence to support the positive effects of CBVE. Some schools have gathered follow-up data on their students. However, there were no baseline or control groups on which to compare CBVE student gains. Thus, there was no way to judge how

effective CBVE was for its students as compared with some alternative program for its students.

Recommendation 6. Conduct an evaluation of CBVE impact on high school graduates.

The state has invested greatly in the concept of CBVE in its vocational programs. The state routinely gathers data on high school graduates and thus may already have the beginnings of a follow-up data base. Graduates from CBVE and non-CBVE programs should be sorted into two groups. Follow-up data should then be analyzed to determine the impacts of CBVE. If the current data base does not collect sufficient relevant information, additional information should be collected to expand the data base to determine CBVE impacts.

Policy Recommendations

Recommendations of the senior administrative personnel and teachers involved in the implementation of CBVE generally focused on two issues: (1) the state should provide more resources to support continued local development (i.e., facility upgrading; development, production, and distribution of instructional materials; and staff development), and (2) the state should develop a clearer policy on CBVE.

Recommendation 7. Develop a comprehensive long-term plan for vocational education.

As noted throughout this report, the BVE's CBVE initiative has undergone several revisions as the funding and the needs of LEAs changed. In addition to competency-based vocational education, the PDE has initiated several other policies that have impacted on vocational education programs at the local level (e.g., admission of special needs students, Chapters 5

and 6 requirements). At this point in time, it is difficult to offer policy recommendations for the continuation of CBVE without considering the overall climate for vocational education, especially at the secondary level. Competition for students, diversity of students with the admission of special needs students, modernization of existing programs, and introduction of new high technology programs all must be considered. Clearly, the next several years will severely test the long-term viability of vocational education. In order to meet this challenge successfully, the state should review its wide array of programs and policies and develop a comprehensive plan for vocational education. This plan should specify and integrate program options in order to maximize the use of limited resources. Without a sharp "big picture," all of the separate program images will become blurred, unconnected, and wasteful. Pennsylvania vocational education can not afford that possibility. Once the state has developed that plan, more program specific recommendations suggested by the LEAs and RBS can be addressed. Until then, it seems unwise and short-sighted to fund initiatives that may or may not relate to the state's long-term program.

V. DISSEMINATION

The primary mechanism for dissemination of this final report will be the Vocational Education Information Network (VEIN) administered through Millersville State College. Also, if desired by PDE, presentations of study findings will be made at the 1986 Pennsylvania Vocational Conference and the Annual Meeting of the American Educational Research Association. The RCU is expected to submit the report for inclusion in the ERIC system.

In addition, a brief Executive Summary of the report has been prepared for wider distribution. Copies of the summary will be provided to PDE for mailing to institutions, associations, and groups, such as the following:

- Universities (e.g., Temple, Penn State, Pitt, all schools in the state university/college system)
- Intermediate units
- Urban school districts
- National Center for Research in Vocational Education (Ohio State University)
- Center for Vocational Personnel Preparation (Indiana University of Pennsylvania)
- Pennsylvania State Advisory Committee for Vocational Education
- Vocational Administrators of Pennsylvania
- Pennsylvania Association of Vocational Teacher Educators
- Pennsylvania Educational Research Association
- Pennsylvania Vocational Association
- Pennsylvania State Education Association
- RISE.

RBS staff will cooperate with newsletters or publications of these groups and will prepare press releases, upon request. Finally, study findings and recommendations will be disseminated through existing RBS dissemination channels, such as the Research and Development Exchange.

The major purpose of this widespread dissemination effort will be to create an awareness of the current status of competency-based vocational education in Pennsylvania. This increased awareness will help to mobilize groups to act on policy recommendations and future PDE policies. PDE, however, will be the primary beneficiary of the evaluation study, since results will provide a comprehensive data base for the important policy decisions which must be made.

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APPENDICES

APPENDIX A

DEMOGRAPHIC DATA ON PARTICIPATING AGENCIES

Demographic Data on Participating Agencies

In addition to collecting background data on the interview and survey respondents, RBS gathered demographic data on the vocational programs of the 75 educational agencies. More exhaustive information was collected during the site visit interviews than during the telephone interviews. Samples for particular variables are therefore noted.

The administrative pattern followed by the 33 schools included in the site visit interview are listed in Table 37.

Table 37

Administrative Pattern at CBVE Schools

Administrative Pattern	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Executive Directors, Directors/ Coordinators of Secondary and Adult Programs, Guidance Counselor(s) and Teachers	11	52	0	0	0	0	11	33
Executive Directors, Central Office Support Staff, Site Administrators, Guidance Counselor(s) and Teachers	5	24	0	0	0	0	5	15
Executive Director, Adult Program Coordinator, Guidance Counselor(s) and Teachers	1	5	0	0	0	0	1	3
Principal, Vice-Principal(s), Curriculum Coordinator(s)/Department Chairpersons, Guidance Counselor(s) and Teachers	4	19	0	0	8	80	12	36
Principal, Guidance Counselor and Teachers	0	0	0	0	2	20	2	6
President, Vice-President, Associate Deans, Department Chairpersons and Teachers	0	0	2	100	0	0	2	6

[a] $n = 21$.

[b] $n = 2$.

[c] $n = 10$.

The first three patterns were characteristic of the AVTSs while the following two were common in comprehensive high schools. The particular pattern used by either AVTSs or high schools depended on student enrollment or the number of facilities. The final pattern was used by both community colleges.

Faculty staffing patterns were also obtained from the site visit interview sample.

Table 38

Faculty Staffing Pattern

Faculty Staffing Pattern	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Faculty assigned to particular shops	17	81	0	0	1	10	18	54
Faculty teach variety of courses in vocational area	1	5	2	100	9	90	12	36
Vocational faculty assigned to particular shops, academic faculty assigned to departments	3	14	0	0	0	0	3	10

[a] $n = 21$.

[b] $n = 2$.

[c] $n = 10$.

The majority of AVTS faculty were assigned to particular shops. Community college and high school faculty were responsible for teaching a variety of courses within a vocational area.

Table 39 describes the various alternatives used by the 33 site visit schools to provide an academic program for their students.

Table 39

Academic Program Arrangements in CBVE Programs

Academic Program Arrangements	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Academic program handled entirely at feeder school	5	24	0	0	0	0	5	15
Academic program handled primarily at feeder school, some remedial reading, and math available at vo-tech	12	57	0	0	0	0	12	36
Academic program offered at vo-tech	4	19	0	0	0	0	4	12
Academic program intermixed with vocational courses at comprehensive high school	0	0	0	0	10	100	10	30
Post-secondary program, academic requirements internal to program	0	0	2	100	0	0	2	6

[a] $n = 21$.

[b] $n = 2$.

[c] $n = 10$.

Of most interest are the AVTS arrangements. Approximately four-fifths of the AVTSs relied on the feeder schools to provide academic programs for students. The majority of these programs, nevertheless, supplemented the feeder school academic program by offering remedial basic skills assistance. Only four of the AVTSs had sole responsibility for the academic program of students.

Support services available to CBVE students are summarized in Table 40.

Table 40

Support Services Available to CBVE Students

Support Services	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
Guidance and career counseling	21	100	2	100	10	100	33	100
Remedial reading or math instruction	18	86	2	100	10	100	30	91
Special education support	19	90	0	0	10	100	29	88
Coop program	20	95	0	0	6	60	26	79
Post-graduation job placement	0	0	1	50	0	0	1	3

[a] $n = 21$.

[b] $n = 2$.

[c] $n = 10$.

Most of the site visit sample of schools offered students guidance and career counseling, remedial basic skills instruction, support for special needs students, and coop placements. Only one community college provided post-graduation placement services.

Table 41 presents the variety of vocational programs offered by the total sample of CBVE implementers and non-implementers.

Table 41

Vocational Programs Offered by Sample

Vocational Program Area	CBVE Implementers								Non-CBVE Implementers							
	AVTS[a]		Com. Col.[b]		HS[c]		All Sites		AVTS[d]		Com. Col.[e]		HS[f]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
Agriculture	19	61	0	0	7	54	26	55	0	0	0	0	10	36	10	36
Business	14	45	2	67	11	85	27	57	2	67	1	100	23	96	26	93
Distributive Ed	11	35	0	0	4	31	25	53	1	33	1	100	3	13	5	18
Health	30	97	1	33	0	0	31	66	3	100	1	100	5	21	9	32
Home Ec/Consumer Ed	24	77	1	33	6	46	31	66	2	67	0	0	22	92	24	86
Industrial Arts	4	13	2	67	3	23	9	19	0	0	1	100	15	63	16	57
Trade and Industry	30	97	2	67	5	38	37	79	3	100	1	100	4	17	8	29
Other	0	0	0	0	1	8	1	2	0	0	0	0	0	0	0	0

Note. Percent of educational agencies is calculated within each type of program.

[a] $n = 31$.

[b] $n = 3$.

[c] $n = 13$.

[d] $n = 3$.

[e] $n = 1$.

[f] $n = 24$.

The distribution of vocational programs for the CBVE implementation was fairly even. For non-CBVE implementers, the programs tended to cluster in the business and home-economics areas, characteristic of the comprehensive high schools that comprised 86 percent of the non-implementers.

CBVE implementers were asked to indicate the length of implementation of CBVE. The average length of implementation was 7 years, as noted in Table 42.

Table 42

Length of CBVE Implementation

Type of School	Mean Years
AVTS	6.77
Community College	5.67
High School	7.96
All Sites	7.01

There was a two-year difference across the three types of schools.

All CBVE implementer and non-implementer interview respondents were asked to list their primary instructional materials. These lists were grouped into seven categories, as listed in Table 43 on the following page. Commercially-published texts received the most widespread use. As might be expected, V-TECS materials were used more frequently by CBVE implementers than non-implementers.

CBVE teachers were also asked to list their primary instructional materials. Half of the teachers did not respond. As reported in Table 44, the other half relied heavily on commercial publishers for their materials.

The physical facilities of the CBVE implementers were toured during the site visits. Table 45 describes these facilities.

Table 43

Source of CBVE Primary Instructional Materials-Interview Respondents

Instructional Materials Source	CBVE Implementers								Non-CBVE Implementers							
	AVTS[a]		Com. Col.[b]		HS[c]		All Sites		AVTS[d]		Com. Col.[e]		HS[f]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
University-published	29	94	1	33	5	38	35	74	3	100	0	0	7	29	10	36
State department-published	8	26	0	0	2	15	10	21	0	0	0	0	6	25	6	21
Commercial publishers	25	81	2	66	12	92	39	83	3	100	1	100	22	92	26	93
Internally-developed	6	19	0	0	3	23	9	19	1	33	1	100	3	13	5	18
V-TECS	25	81	2	66	6	46	33	70	2	66	0	0	1	4	3	11
Union/Industry-developed	6	19	0	0	0	0	6	13	0	0	0	0	0	0	0	0
Unknown	1	3	1	33	0	0	2	4	0	0	0	0	2	8	2	7

Note. Percent of educational agencies is calculated within each type of program.

[a] n = 31.

[b] n = 3.

[c] n = 13.

[d] n = 3

[e] n = 1

[f] n = 24.

Table 44

Source of CBVE Primary Instructional Materials-Teacher Surveys

Instructional Materials Source	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
University-published	26	9	0	0	1	2	27	8
State department-published	19	7	0	0	3	5	22	6
Commercial publishers	138	50	1	9	29	49	168	48
Internally-developed	17	6	0	0	1	2	18	5
V-TECS	16	6	0	0	2	3	18	5
Union/Industry-developed	18	6	0	0	1	2	19	5
Unknown	116	42	10	91	37	63	163	47

[a] $\underline{n} = 278$.

[b] $\underline{n} = 11$.

[c] $\underline{n} = 59$.

Table 45

Physical Facilities for CBVE Programs

Physical Facilities	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
One building, shops & classrooms - no changes	14	67	2	100	0	0	16	30
Two or more buildings, shops & classrooms - no changes	5	24	0	0	2	20	7	21
Classrooms/shops within school building - no changes	1	5	0	0	8	80	9	27
One building, shops & classrooms grouped together, also academic wing - no changes	1	5	0	0	0	0	1	3

[a] n = 21.

[b] n = 2.

[c] n = 10.

Approximately half of the schools were located in one building and required no major changes to implement CBVE. In fact, none of the schools reported any physical changes to implement CBVE.

APPENDIX B

CBVE EVALUATION INSTRUMENTS

PDE CBVE INTERVIEW

I. History/Context

1. What was the impetus for PDE's involvement in CBVE?

2. Describe the diffusion/adoption process of CBVE at the state level.

- Approach or strategy utilized
- Key staff involved
- Major activities and timeline
- Milestones and roadblocks
- Current status of adoption of state model

* 3. What are the major outcomes or benefits expected by PDE from the adoption of CBVE?

4. What were CBVE's greatest advantages or greatest disadvantages to PDE?

II. Local Adoption of CBVE

* 1. The state has followed a five step plan for encouraging the adoption of CBVE by LEAs. Briefly describe each of the steps in terms of key staff involved, activities and timelines, milestones and roadblocks, and your involvement.

a. Step 1 - Policy Recommendation and Development of Implementation Model

- Approach utilized
- Key staff involved
- Major activities and timeline
- Milestones and roadblocks
- Your involvement

b. Step 2 - In-service Training Program

- Approach utilized
- Key staff involved

- Major activities and timeline
- Milestones and roadblocks
- Your involvement

c. Step 3 - Support for CBVE Curriculum Coordinators

- Approach utilized
- Key staff involved
- Major activities and timeline
- Milestones and roadblocks
- Your involvement

d. Step 4 - Dissemination of Successful Practices

- Approach utilized
- Key staff involved
- Major activities and timeline
- Milestones and roadblocks
- Your involvement

e. Step 5 - TA Through Central Office & Regional Office Field Staff

- Approach utilized
- Key staff involved
- Major activities and timeline
- Milestones and roadblocks
- Your involvement

2. What are PDE's priorities for the adoption of CBVE among its three target groups:

- AVTSs?
- Comprehensive high schools?

- Community colleges?

3. What is the status of CBVE implementation among the three groups:
   - AVTSs?
   - Comprehensive high schools?
   - Community colleges?
4. What variations have occurred in the implementation of CBVE by the three groups? Why have these variations occurred?
   - AVTSs
   - Comprehensive high schools
   - Community colleges
5. How important is the fidelity of LEA implementation of CBVE to PDE?

* 6. What are the correlates of successful local implementation of CBVE?

7. What is CBVE's greatest advantage to the LEAs? Greatest disadvantage?
8. How does the extent of adoption of the PDE CBVE model compare with the extent of adoption of alternative CBVE models?
   - What are the characteristics of alternative models adopted?
   - What is the current status of the alternative models adopted by LEAs?

III. State Level Effort

1. Has the PDE CBVE effort met the needs of the broad range of educational agencies throughout the state? What are the outstanding needs?
2. What part of the CBVE effort has been most effective? Least effective?
3. How has the PDE funding strategy affected the implementation of CBVE at the local level?

4. What evidence exists that CBVE has made a positive impact on the vocational development of students?

5. If PDE had it to do over, what modifications would you recommend be made in the state's effort?

6. What will the status of CBVE in Pennsylvania be in:

   - one year?
   - five years?

* 7. What policy recommendations can be made as PDE develops long-range plans for assuring quality vocational education programs across the state?

CBVE TELEPHONE INTERVIEW FORM

INTRODUCTION: Research for Better Schools (RBS) is conducting a study on the status of Competency-Based Vocational Education (CBVE) for the Pennsylvania Department of Education. As part of this effort, RBS is interviewing a sample of individuals, like you, who are responsible for vocational education curriculum at their respective schools.

I hope you will answer my questions as honestly and completely as possible. Answer the items based on your own personal involvement and participation in relation to the vocational education programs at your school. All responses will be kept anonymous and reported only in aggregated form. The results will be used to determine the current status of CBVE in Pennsylvania as well as to make policy recommendations for future vocational efforts across the state.

I. BACKGROUND INFORMATION

1. Name: _____

2. Title: _____

3. School/District: _____

4. Responsibilities: _____

_____

_____

_____

5. Length of time in this position: _____ years

6. In January 1984, the RCU sent your school (district) a survey on Competency-Based Vocational Education. Your district (returned/ did not return, but answered a later RBS telephone survey) that survey. Were you the individual completing the survey?

_____ Yes _____ No _____ Doesn't Know

7. The RCU survey indicated that your school is currently:

_____ implementing CBVE.
_____ not implementing CBVE.

Is that information correct?

_____ School is implementing CBVE. Continue with Section II.
_____ School is not implementing CBVE. Skip to Section III.

II. CBVE PROGRAMS AT YOUR SCHOOL

1. In which vocational programs are you implementing CBVE at the present time? (Check all that apply.)

_____ Agriculture
_____ Business
_____ Distributive Education
_____ Health
_____ Home Ec/Consumer Ed
_____ Industrial Arts
_____ Trade and Industry

2. How long have you been implementing CBVE in your school?
_____ years

3. Did your school apply and receive funds from PDE for a curriculum coordinator to facilitate the implementation of CBVE?

_____ No, skip to Item 5
_____ Yes, continue with Item 4

4. How effective was the curriculum coordinator in facilitating the implementation of CBVE at your school?

Very Ineffective	Ineffective	Effective	Very Effective
_____	_____	_____	_____

Comments:

5. The Bureau has identified 10 elements critical to the implementation of CBVE. Indicate the extent to which your school has implemented each of these elements on a 4-point scale (1=Not Yet Implemented, 2=Minimally Implemented, 3=Moderately Implemented, 4=Fully Implemented).

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
I. Define Scope of Course				
A. Major occupations are defined by D.O.T. code and title in which the greatest number of recent graduates have been employed during the past 3 years.	4	3	2	1
B. Employment opportunities for defined occupations are projected for 3-5 yrs. from labor market data and craft committee feedback.	4	3	2	1
C. Anticipated technological changes in defined occupations are determined from industry and craft committee feedback.	4	3	2	1
D. Course description written for assigned VEMIS title based upon D.O.T. occupations and verified by craft committee.	4	3	2	1
II. Validate Occupational Competencies				
A. V-TECS task lists were reviewed by instructors to identify tasks for defined occupations.	4	3	2	1
B. Other task lists reviewed by instructor to identify additional tasks for defined occupations.	4	3	2	1
C. Task lists created for defined occupations where none are currently available.	4	3	2	1
D. Occupational tasks for defined occupations approved and documented by craft committee based upon industry needs.	4	3	2	1

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
III. Identify Valid Terminal Performance Objectives for Each Task				
A. Performance objectives from appropriate V-TECS catalog(s) identified and reviewed.	4	3	2	1
B. Performance objectives from other sources identified and reviewed.	4	3	2	1
C. Performance objectives written for tasks where none are currently available.	4	3	2	1
D. Performance objective content reviewed with craft committee to determine validity of conditions, performance, and standards.	4	3	2	1
IV. Identify Sequential Performance Steps for Each Task				
A. Performance guides in V-TECS catalog(s) reviewed for content and sequence.	4	3	2	1
B. Performance steps identified and reviewed for content and sequence for tasks not identified in V-TECS catalog.	4	3	2	1
C. Performance steps written and sequenced for tasks where none are currently available.	4	3	2	1
D. Performance guide content and sequence for all identified tasks approved and documented by craft committee.	4	3	2	1
V. Determine Resources Required to Perform Tasks				
A. V-TECS tool and equipment list analyzed for application to task performance.	4	3	2	1

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
B. Additional tools and equipment identified for tasks.	4	3	2	1
C. Facility and/or environmental requirements identified and documented.	4	3	2	1
D. Reference materials identified for each task.	4	3	2	1
E. Finalized resource list reviewed and documented by craft committee.	4	3	2	1
VI. Determine Required Task Sequence				
A. Reviewed performance guides to identify prerequisite tasks.	4	3	2	1
VII. Assess Student Performance for Each Objective				
A. Performance tests constructed for each objective based upon established standards.	4	3	2	1
B. A system to convert performance on objectives to a conventional grading scale (if required) is in place and known to students.	4	3	2	1
VIII. Identify Instructional Program Contents for Each Student				
A. Tentative career objective identified and documented for each student.	4	3	2	1
B. Task list delineated and reviewed with each student for occupation in career objective.	4	3	2	1

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
C. Student entry level skills assessed to determine initial instructional placement in program.	4	3	2	1
D. Task list converted to an individual program for each student.	4	3	2	1
IX. Design a Learning Management System				
A. System developed to monitor student progress.	4	3	2	1
B. System provides for continuous feedback to the student.	4	3	2	1
X. Conduct Course Evaluation				
A. Student completion and follow-up data compiled for course revision.	4	3	2	1
B. On-the-job performance of graduates assessed through employer feedback via local surveys.	4	3	2	1
C. Industry data obtained and used to determine future applicability of course content.	4	3	2	1
D. Feedback information used to periodically recycle instructor(s) through CBVE implementation process.	4	3	2	1

6. List the primary instructional materials (e.g., textbook series, student learning guides, resource materials) that are currently being used in CBVE vocational education classes. (Be sure to list materials by complete title, publisher, and publication date.)

Title	Publisher	Publication Date

7. Briefly describe the training or technical assistance your school received related to CBVE. Include school district-sponsored programs as well as other programs you individually opted to attend.

8. Why did your district decide to adopt CBVE in its vocational education program?

9. A number of factors have been linked to either the successful or unsuccessful adoption of innovative programs. Indicate the extent to which the following factors influenced your school's adoption of CBVE on a 5-point scale (5=Very positively influenced, 4=Positively influenced, 3=Did not influence, 2=Negatively influenced, 1=Very negatively influenced).

Factor	Very Positively Influenced	Positively Influenced	Did Not Influence	Negatively Influenced	Very Negatively Influenced
A. Administrative support of CBVE	5	4	3	2	1
B. Faculty support of CBVE	5	4	3	2	1
C. Practicality and/or utility of CBVE in the classroom	5	4	3	2	1
D. Perceived importance of CBVE in meeting vocational education programs needs	5	4	3	2	1
E. Faculty orientation, training, and technical assistance	5	4	3	2	1
F. Faculty planning and preparation time before actual implementation of CBVE	5	4	3	2	1
G. Availability of necessary resources	5	4	3	2	1
H. Opportunity for faculty input and autonomy in the implementation of CBVE	5	4	3	2	1

Briefly describe any other factors that especially facilitated adoption of CBVE.

Briefly describe any other factors that particularly detracted from adoption of CBVE.

III. NON-CBVE PROGRAMS AT YOUR SCHOOL

1. In what areas does your school offer vocational programs? (Check all that apply.)

_____ Agriculture
_____ Business
_____ Distributive Education
_____ Health
_____ Home Ec/Consumer Ed
_____ Industrial Arts
_____ Trade and Industry

2. What instructional strategies or programs are being employed in these programs? (Check all that apply.)

_____ Pennsylvania Planned Course of Study

_____ University-developed materials _____

_____
(please specify)

_____ Commercially-developed materials _____

_____
(please specify)

_____ Other _____

_____
(please specify)

_____ Other _____

_____
(please specify)

Comments:

3. List the primary instructional materials (e.g., textbook series, student learning guides, resource materials) that are currently being used in your vocational education classes. (Be sure to list materials by complete title, publisher, and publication date.)

Name	Publisher	Publication Date

4. Why did your school decline to implement CBVE?

5. A number of factors have been linked to schools' decisions to adopt or reject innovative programs like CBVE. Indicate the extent to which the following factors were seen as factors that influenced the adoption or rejection of CBVE. Use the following 5-point scale (5=Very favorable to adoption, 4=Favorable to adoption, 3=Not a factor, 2=Unfavorable to adoption, 1=Very unfavorable to adoption).

	Very Favorable	Favorable	Not a Factor	Unfavorable	Very Unfavorable
A. Administrative support of CBVE	5	4	3	2	1
B. Faculty support of CBVE	5	4	3	2	1
C. Practicality and/or utility of CBVE in the classroom	5	4	3	2	1
D. Perceived importance of CBVE in meeting vocational education needs	5	4	3	2	1
E. Availability of faculty for training, preparation, and planning for implementation of CBVE	5	4	3	2	1
F. Availability of instructional resources	5	4	3	2	1

Briefly describe any other factors that especially contributed to your decision not to adopt CBVE.

IV. OTHER COMMENTS

1. I've asked you to give me a lot of information on your school's adoption or non-adoption of CBVE. Is there anything I've neglected to ask that you feel I should know?

2. Do you have any other comments to make?

CBVE SITE VISIT FORM

INTRODUCTION: Research for Better Schools (RBS) is conducting a study on the status of Competency-Based Vocational Education (CBVE) for the Pennsylvania Department of Education. As part of this effort, RBS is interviewing a sample of individuals, like you, who are responsible for vocational education curriculum at their respective schools.

I hope you will answer my questions as honestly and completely as possible. Answer the items based on your own personal involvement and participation in relation to the vocational education programs at your school. All responses will be kept anonymous and reported only in aggregated form. The results will be used to determine the current status of CBVE in Pennsylvania as well as to make policy recommendations for future vocational efforts across the state.

I. BACKGROUND INFORMATION

1. Name: _____

2. Title: _____

3. School/District: _____

4. Responsibilities: _____

_____

_____

_____

5. Length of Time in This Position: _____ years

6. In January 1984, the RCU sent your school (district) a survey on Competency-Based Vocational Education. Your district (returned that survey/did not return, but answered a later RBS telephone survey). Were you the individual completing the survey?

_____ Yes _____ No _____ Doesn't Know

7. The RCU survey indicated that your school is currently:

_____ implementing CBVE.
_____ not implementing CBVE.

Is that information correct?

_____ School is implementing CBVE. Continue with Question 8.
_____ School is not implementing CBVE. Skip to Section III.

8. How long have you been implementing CBVE in your school?

_____ years

9. Why did your district/school decide to adopt CBVE in its vocational education program?

10. What particular program needs (e.g., student, instructional) did you expect CBVE to address?

11. What are the goals and objectives of the CBVE program at your school?

12. Has your district/school been involved in other innovative programs?

_____ No _____ Yes, if yes, describe below.

II. CBVE PROGRAMS AT YOUR SCHOOL

1. In which vocational programs are you implementing CBVE at the present time? (Check all that apply.) In addition, list specific course titles for those programs implementing CBVE.

Vocational Program	Course Title(s)
_____ Agriculture	_____
	_____
	_____
_____ Business	_____
	_____
	_____
_____ Distributive Education	_____
	_____
	_____
_____ Health	_____
	_____
	_____
_____ Home Ec/ Consumer Ed	_____
	_____
	_____
_____ Industrial Arts	_____
	_____
	_____

Vocational Program	Course Title(s)
_____ Trade and Industry	_____
	_____
	_____

2. Did your school apply and receive funds from PDE for a curriculum coordinator to facilitate the implementation of CBVE?

   _____ No, skip to Item 4
   _____ Yes, continue with Item 3

3. How effective was the curriculum coordinator in facilitating the implementation of CBVE at your school?

Very Ineffective	Ineffective	Effective	Very Effective
_____	_____	_____	_____

   Comments:

4. Has your district/school received other funds for operating its CBVE program?

   _____ No _____ Yes. If yes, describe below.

5. Briefly describe the training or technical assistance your school received related to CBVE. Include school/district-sponsored programs as well as other programs you individually opted to attend.

6. Has PDE provided other support to assist your district/school in its adoption of CBVE?

_____ No _____ Yes. If yes, describe below.

7. The Bureau has identified 10 elements critical to the implementation of CBVE. Indicate the extent to which your school has implemented each of these elements on a 4-point scale (1=Not Yet Implemented, 2=Minimally Implemented, 3=Moderately Implemented, 4=Fully Implemented). Note any special features or comments.

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
I. Define Scope of Course				
A. Major occupations are defined by D.O.T. code and title in which the greatest number of recent graduates have been employed during the past 3 years.	4	3	2	1
B. Employment opportunities for defined occupations are projected for 3-5 yrs. from labor market data and craft committee feedback.	4	3	2	1
C. Anticipated technological changes in defined occupations are determined from industry and craft committee feedback.	4	3	2	1
D. Course description written for assigned VEMIS title based upon D.O.T. occupations and verified by craft committee.	4	3	2	1

Comments:

II. Validate Occupational Competencies				
A. V-TECS task lists were reviewed by instructors to identify tasks for defined occupations.	4	3	2	1
B. Other task lists reviewed by instructor to identify additional tasks for defined occupations.	4	3	2	1

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
C. Task lists created for defined occupations where none are currently available.	4	3	2	1
D. Occupational tasks for defined occupations approved and documented by craft committee based upon industry needs.	4	3	2	1

Comments:

III. Identify Valid Terminal Performance Objectives for Each Task

A. Performance objectives from appropriate V-TECS catalog(s) identified and reviewed.	4	3	2	1
B. Performance objectives from other sources identified and reviewed.	4	3	2	1
C. Performance objectives written for tasks where none are currently available.	4	3	2	1
D. Performance objective content reviewed with craft committee to determine validity of conditions, performance, and standards.	4	3	2	1

Comments:

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
IV. Identify Sequential Performance Steps for Each Task				
A. Performance guides in V-TECS catalog(s) reviewed for content and sequence.	4	3	2	1
B. Performance steps identified and reviewed for content and sequence for tasks not identified in V-TECS catalog.	4	3	2	1
C. Performance steps written and sequenced for tasks where none are currently available.	4	3	2	1
D. Performance guide content and sequence for all identified tasks approved and documented by craft committee.	4	3	2	1

Comments:

V. Determine Resources Required to Perform Tasks				
A. V-TECS tool and equipment list analyzed for application to task performance.	4	3	2	1
B. Additional tools and equipment identified for tasks.	4	3	2	1
C. Facility and/or environmental requirements identified and documented.	4	3	2	1
D. Reference materials identified for each task.	4	3	2	1

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
E. Finalized resource list reviewed and documented by craft committee.	4	3	2	1

Comments:

VI. Determine Required Task Sequence

A. Reviewed performance guides to identify prerequisite tasks.	4	3	2	1

Comments:

VII. Assess Student Performance for Each Objective

A. Performance tests constructed for each objective based upon established standards.	4	3	2	1
B. A system to convert performance on objectives to a conventional grading scale (if required) is in place and known to students.	4	3	2	1

Are criterion-referenced tests used to assess student performance?

_____ No _____ Yes. If yes, describe below.

Comments:

		Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
VIII.	Identify Instructional Program Contents for Each Student				
A.	Tentative career objective identified and documented for each student.	4	3	2	1
B.	Task list delineated and reviewed with each student for occupation in career objective.	4	3	2	1
C.	Student entry level skills assessed to determine initial instructional placement in program.	4	3	2	1
D.	Task list converted to an individual program for each student.	4	3	2	1

Do students receive credit for prior achievement in your CBVE program?

_____ No _____ Yes. Explain briefly.

Comments:

IX.	Design a Learning Management System				
A.	System developed to monitor student progress.	4	3	2	1
B.	System provides for continuous feedback to the student.	4	3	2	1

Comments:

	Fully Imple.	Moderately Implemented	Minimally Implemented	Not Yet Imple.
X. Conduct Course Evaluation				
A. Student completion and follow-up data compiled for course revision.	4	3	2	1
B. On-the-job performance of graduates assessed through employer feedback via local surveys.	4	3	2	1
C. Industry data obtained and used to determine future applicability of course content.	4	3	2	1
D. Feedback information used to periodically recycle instructor(s) through CBVE implementation process.	4	3	2	1

Comments:

8. List the primary instructional materials (e.g., V-TECS catalogs, Pennsylvania State University Course of Study materials, textbooks) that are currently being used in CBVE vocational education classes. (Be sure to list the materials as completely as possible.)

Vocational Program	Instructional Material Name

9. Describe the physical facilities of your CBVE program. What changes were necessary in order to implement the CBVE program?

10. What arrangements has your district/school made for the academic program of your students?

11. What support services (e.g., guidance, career counseling, job placement) are available to your students?

12. Describe the administration pattern used at your school.

13. Describe the faculty staffing pattern used at your school.

14. A number of factors have been linked to either the successful or unsuccessful adoption of innovative programs. Indicate the extent to which the following factors influenced your school's adoption of CBVE on a 5-point scale (5=Very positively influenced, 4=Positively influenced, 3=Did not influence, 2=Negatively influenced, 1=Very negatively influenced).

Factor	Very Positively Influenced	Positively Influenced	Did Not Influence	Negatively Influenced	Very Negatively Influenced
A. Administrative support of CBVE	5	4	3	2	1
B. Faculty support of CBVE	5	4	3	2	1
C. Practicality and/or utility of CBVE in the classroom	5	4	3	2	1
D. Perceived importance of CBVE in meeting vocational education programs needs	5	4	3	2	1
E. Faculty orientation, training, and technical assistance	5	4	3	2	1
F. Faculty planning and preparation time before actual implementation of CBVE	5	4	3	2	1
G. Availability of necessary resources	5	4	3	2	1
H. Opportunity for faculty input and autonomy in the implementation of CBVE	5	4	3	2	1

Briefly describe any other factors that especially facilitated adoption of CBVE.

Briefly describe any other factors that particularly detracted from adoption of CBVE.

15. What information has been gathered to document the positive impacts of CBVE on students enrolled in vocational education programs at your school? Check all that apply. (Obtain copies of these documents)

Information

_____ Increase in percentage of students successfully completing program requirements

_____ Decrease in student attrition from voc. ed. program

_____ Improved student grades

_____ Improved student attendance/decrease in student absenteeism

_____ Improved student attitudes

_____ Increase in percentage of students placed in voc. ed. program-related positions following graduation

_____ Other _____
(please specify)

16. What other impacts has the CBVE program had in your school?

17. What outstanding needs do you have in terms of implementing CBVE at your school?

18. What future plans does your school have for CBVE?

19. What policy recommendations would you make regarding the continued implementation and institutionalization of CBVE:

    a. in your school?

    b. across the state?

III. NON-CBVE PROGRAMS AT YOUR SCHOOL

1. In what areas does your school offer non-CBVE vocational programs? (Check all that apply.)

_____ Agriculture
_____ Business
_____ Distributive Education
_____ Health
_____ Home Ec/Consumer Ed
_____ Industrial Arts
_____ Trade and Industry

2. What instructional strategies or programs are being employed in these programs? (Check all that apply.)

_____ Planned Courses approved by the Pennsylvania Department of Education

_____ University-developed materials _____

_____
(please specify)

_____ Commercially-developed materials _____

_____
(please specify)

_____ Other _____

_____
(please specify)

_____ Other _____

_____
(please specify)

Comments:

3. List the primary instructional materials (e.g., V-TECS catalogs, Penn State Course of Study materials, textbook) that are currently being used in your vocational education classes. (Be sure to list materials as completely as possible.)

Vocational Program	Instructional Material Name

4. Why did your school decline to implement CBVE?

5. A number of factors have been linked to schools' decisions to adopt or reject innovative programs like CBVE. Indicate the extent to which the following factors were seen as factors that influenced the adoption or rejection of CBVE. Use the following 5-point scale (5=Very favorable to adoption, 4=Favorable to adoption, 3=Not a factor, 2=Unfavorable to adoption, 1=Very unfavorable to adoption).

	Very Favorable	Favorable	Not a Factor	Unfavorable	Very Unfavorable
A. Administrative support of CBVE	5	4	3	2	1
B. Faculty support of CBVE	5	4	3	2	1
C. Practicality and/or utility of CBVE in the classroom	5	4	3	2	1
D. Perceived importance of CBVE in meeting vocational education needs	5	4	3	2	1
E. Availability of faculty for training, preparation, and planning for implementation of CBVE	5	4	3	2	1
F. Availability of instructional resources	5	4	3	2	1

Briefly describe any other factors that especially contributed to your decision not to adopt CBVE.

IV. OTHER COMMENTS

1. I've asked you to give me a lot of information on your school's adoption or non-adoption of CBVE. Is there anything I've neglected to ask that you feel I should know?

2. Do you have any other comments to make?

CBVE Teacher Survey

Research for Better Schools (RBS) is conducting a survey on the state-wide implementation of Competency-Based Vocational Education (CBVE) for the Pennsylvania Department of Education. As part of this effort, RBS is surveying a sample of teachers, like you, involved in the implementation of CBVE at their respective schools. Please respond to the survey as completely as possible. Answer the items based on your own personal involvement and participation in relation to the vocational education programs at your school. All responses will be kept anonymous and reported only in aggregated form. The results will be used to determine the current status of CBVE in Pennsylvania as well as to make policy recommendations for future CBVE efforts across the state.

Completed surveys should be returned to _____ (Name) at your school by _____ (Date). If you have any questions, you may contact _____ or Dr. Joan Buttram at RBS. Thank you for your input and assistance.

Vocational Program Area: _____

No. of Years of Teaching: _____ No. of Yrs. of CBVE Experience: _____

1. Indicate the extent to which the vocational education program has implemented each of the elements below.

I. Define Scope of Course	Fully Implemented	Moderately Implemented	Minimally Implemented	Not Yet Implemented
A. Major occupations are defined by D.O.T. code and title in which the greatest number of recent graduates have been employed during the past 3 years.	4	3	2	1
B. Employment opportunities for defined occupations are projected for 3-5 yrs. from labor market data and craft committee feedback.	4	3	2	1
C. Anticipated technological changes in defined occupations are determined from industry and craft committee feedback.	4	3	2	1
D. Course descriptions written for assigned VEMIS title based upon D.O.T. occupations and verified by craft committee.	4	3	2	1
II. Validate Occupational Competencies				
A. V-TECS task lists were reviewed by instructors to identify tasks for defined occupations.	4	3	2	1
B. Other task lists reviewed by instructor to identify additional tasks for defined occupations.	4	3	2	1
C. Task lists created for defined occupations where none are currently available.	4	3	2	1

	Fully Implemented	Moderately Implemented	Minimally Implemented	Not Yet Implemented
II. Validate Occupational Competencies				
D. Occupational tasks for defined occupations approved. and documented by craft committee based upon industry needs.	4	3	2	1
III. Identify Valid Terminal Performance Objective for Each Task				
A. Performance objectives from appropriate V-TECS catalog(s) identified and reviewed.	4	3	2	1
B. Performance objectives from other sources identified and reviewed.	4	3	2	1
C. Performance objectives written for tasks where none are currently available.	4	3	2	1
D. Performance objective content reviewed with craft committee to determine validity of conditions, performance, and standards.	4	3	2	1
IV. Identify Sequential Performance Steps for Each Task				
A. Performance guides in V-TECS catalog(s) reviewed for content and sequence.	4	3	2	1
B. Performance steps identified and reviewed for content and sequence for tasks not identified in V-TECS catalog.	4	3	2	1
C. Performance steps written and sequenced for tasks where none are currently available.	4	3	2	1

	Fully Implemented	Moderately Implemented	Minimally Implemented	Not Yet Implemented
IV. Identify Sequential Performance Steps for Each Task				
D. Performance guide content and sequence for all identified tasks approved and documented by craft committee.	4	3	2	1
V. Determine Resources Required to Perform Tasks				
A. V-TECS tool and equipment list analyzed for application to task performance.	4	3	2	1
B. Additional tools and equipment identified for tasks.	4	3	2	1
C. Facility and/or environmental requirements identified and documented.	4	3	2	1
D. Reference materials identified for each task.	4	3	2	1
E. Finalized resource list reviewed and documented by craft committee.	4	3	2	1
VI. Determine Required Task Sequence				
A. Reviewed performance guides to identify prerequisite tasks.	4	3	2	1
VII. Assess Student Performance for Each Objective				
A. Performance tests constructed for each objective based upon established standards.	4	3	2	1
B. A system to convert performance on objectives to a conventional grading scale (if required) is in place and known to students.	4	3	2	1

	Fully Implemented	Moderately Implemented	Minimally Implemented	Not Yet Implemented
VII. Identify Instructional Program Contents for Each Student				
A. Tentative career objective identified and documented for each student.	4	3	2	1
B. Task list delineated and reviewed with each student for occupation in career objective.	4	3	2	1
C. Student entry level skills assessed to determine initial instructional placement in program.	4	3	2	1
D. Task list converted to an individual program for each student.	4	3	2	1
IX. Design a Learning Management System				
A. System developed to monitor student progress.	4	3	2	1
B. System provides for continuous feedback to the student.	4	3	2	1
X. Conduct Course Evaluation				
A. Student completion and follow-up data compiled for course revision.	4	3	2	1
B. On-the-job performance of graduates assessed through employer feedback via local surveys.	4	3	2	1
C. Industry data obtained and used to determine future applicability of course content.	4	3	2	1
D. Feedback information used to periodically recycle instructor(s) through CBVE implementation process.	4	3	2	1

2. List below the primary instructional materials (e.g., textbook series, student learning guides, resource materials) that you are currently using in your vocational education classes. Be sure to list materials by their complete title.

3. Briefly describe the training or technical assistance you have received related to CBVE. Include school district-sponsored programs as well as other programs you individually chose to attend.

4. What information has been gathered to document the positive impacts of CBVE on students enrolled in vocational education programs at your school? Check all that apply. For each item checked, indicate briefly how this information my be obtained (e.g., from vocational education director, 1983-84 evaluation report).

Information	Source
_____ Increase in percentage of students successfully completing program requirements	_____
_____ Decrease in student attrition from vocational education program	_____
_____ Improved student grades	_____
_____ Improved student attendance/ decrease in student absenteeism	_____
_____ Improved student attitudes	_____
_____ Increase in percentage of students placed in voc. ed. program-related positions following graduation	_____
_____ Increase in percentage of students placed in further training programs	_____
_____ Other _____ (please specify)	

5. A number of factors have been linked to either the successful or unsuccessful adoption of innovative programs. Indicate the extent to which the factors below influenced your adoption of CBVE.

	Factor	Very Positively Influenced	Positively Influenced	Did Not Influence	Negatively Influenced	Very Negatively Influenced
A.	Administrative support of CBVE	5	4	3	2	1
B.	Faculty support of CBVE	5	4	3	2	1
C.	Practicality and/or utility of CBVE in the classroom	5	4	3	2	1
D.	Perceived importance of CBVE in meeting vocational education program needs	5	4	3	2	1
E.	Faculty orientation, training and technical assistance required	5	4	3	2	1
F.	Faculty planning and preparation time needed before actual implementation of CBVE	5	4	3	2	1
G.	Availability of necessary resources	5	4	3	2	1
H.	Opportunity for faculty input and autonomy in the implementation of CBVE	5	4	3	2	1
I.	PDE support for CBVE	5	4	3	2	1
J.	Local advocate for CBVE	4	4	3	2	1

Briefly describe any other factors that especially facilitated you adoption of CBVE.

Briefly describe any other factors that particular detracted from your adoption of CBVE.

6. What outstanding needs do you currently have in terms of implementing CBVE in your school?

7. What policy recommendations would you make regarding the continued implementation of CBVE:

   a. in your school?

   b. across the state?

APPENDIX C

CBVE IMPLEMENTER RATINGS OF EXTENT OF IMPLEMENTATION - SUB-ELEMENTS

Table 46

Extent of CBVE Implementation Ratings - CBVE Implementers

BVE Model Element	Mean Ratings			
	AVTS	Community College	HS	All Sites
I. Define Scope of Course				
A. Major occupations defined by D.O.T. code	3.45	3.00	2.75	3.24
B. 3-5 years employment projections	3.19	3.67	2.92	3.15
C. Anticipated technological changes	3.55	3.67	3.00	3.41
D. Course descriptions-VEMIS title	3.68	3.00	2.75	3.39
II. Validate Occupational Competencies				
A. V-TECS task lists	3.58	3.00	2.85	3.34
B. Other task lists	3.39	3.67	2.85	3.26
C. Tasks lists created	3.16	3.00	2.31	2.91
D. Occupational tasks approved	3.63	3.67	2.85	3.41
III. Identify Terminal Performance Objectives				
A. V-TECS objectives	3.19	3.00	2.77	3.06
B. Other sources	3.19	3.67	2.69	3.09
C. Written when not available	3.23	3.00	2.08	2.89
D. Objectives reviewed	3.32	3.67	2.69	3.17
IV. Identify Sequential Performance Steps				
A. V-TECS guides	3.19	3.00	2.69	3.04
B. Other sources	3.17	3.67	2.38	2.98
C. Written when not available	3.00	3.33	2.15	2.79
D. Guides approved	3.19	3.67	2.38	3.00
V. Resources				
A. V-TECS lists	3.23	1.50	2.54	2.96
B. Other lists	3.42	3.00	2.85	3.24
C. Facility requirements	3.32	2.50	3.23	3.26
D. Reference material	3.13	3.00	2.85	3.04
E. List reviewed	2.97	2.67	2.42	2.80

BVE Model Element	Mean Ratings			
	AVTS	Community College	HS	All Sites
VI. Task Sequence				
A. Reviewed guides	3.03	2.67	3.08	3.02
VII. Assess Student Performance				
A. Performance tests constructed	3.10	3.33	2.85	3.04
B. Conventional grading scale	2.84	3.33	3.00	2.91
VIII. Student Instructional Program				
A. Tentative career objectives	3.67	3.50	3.38	3.59
B. Task list delineated	3.00	2.50	2.54	2.85
C. Student entry level skills	2.77	3.00	2.77	2.78
D. Task list converted	2.83	3.00	2.23	2.67
IX. Design Learning Management System				
A. System developed	3.29	3.33	3.31	3.30
B. Continuous feedback	3.29	3.67	3.15	3.28
X. Conduct Course Evaluation				
A. Student completion and follow-up data	2.87	3.67	2.77	2.89
B. On-the-job performance of graduates	2.97	3.00	2.69	2.89
C. Industry data	3.32	3.67	3.08	3.28
D. Feedback used to recycle instructors	2.45	1.50	2.23	2.35

APPENDIX D

CBVE TEACHER RATINGS OF EXTENT OF IMPLEMENTATION - SUB-ELEMENTS

Table 47

Extent of CBVE Implementation - Teacher Survey

BVE Model Element	Mean Ratings			
	AVTS	Community College	HS	All Sites
I. Define Scope of Course				
A. Major occupations defined by D.O.T. code	3.30	3.27	2.58	3.18
B. 3-5 yrs employment projections	3.16	3.09	2.45	3.05
C. Anticipated technological changes	3.37	3.63	2.74	3.28
D. Course descriptions-VEMIS title	3.29	3.45	2.54	3.17
II. Validate Occupational Competencies				
A. V-TECS task lists	3.41	3.36	2.26	3.22
B. Other task lists	3.41	3.45	2.51	3.28
C. Tasks lists created	3.12	3.45	2.17	2.97
D. Occupational tasks approved	3.28	3.09	2.33	3.12
III. Identify Terminal Performance Objectives				
A. V-TECS objectives	3.16	3.18	2.17	3.00
B. Other sources	3.26	3.27	2.74	3.17
C. Written when not available	3.12	3.27	2.54	3.03
D. Objectives reviewed	3.06	3.00	2.30	2.94
IV. Identify Sequential Performance Steps				
A. V-TECS guides	3.04	3.40	2.08	2.89
B. Other sources	2.96	3.50	2.34	2.87
C. Written when not available	3.02	3.40	2.41	2.93
D. Guides approved	2.88	2.91	2.09	2.75
V. Resources				
A. V-TECS lists	3.07	2.70	2.31	2.94
B. Other lists	3.20	2.90	2.75	3.12
C. Facility requirements	3.12	2.80	2.60	3.03
D. Reference material	3.20	3.09	2.72	3.12
E. List reviewed	2.74	2.82	1.92	2.61

BVE Model Element	Mean Ratings			
	AVTS	Community College	HS	All Sites
VI. Task Sequence				
A. Reviewed guides	3.02	3.18	2.42	2.93
VII. Assess Student Performance				
A. Performance tests constructed	3.29	3.09	3.08	3.25
B. Conventional grading scale	3.19	3.09	3.00	3.15
VIII. Student Instructional Program				
A. Tentative career objectives	3.33	3.10	2.83	3.24
B. Task list delineated	3.04	3.10	2.11	2.89
C. Student entry level skills	2.89	3.00	2.63	2.85
D. Task list converted	2.82	2.80	2.04	2.69
IX. Design Learning Management System				
A. System developed	3.32	3.09	2.93	3.25
B. Continuous feedback	3.29	3.27	2.91	3.22
X. Conduct Course Evaluation				
A. Student completion and follow-up data	2.91	2.82	2.59	2.86
B. On-the-job performance of graduates	2.83	2.45	2.72	2.80
C. Industry data	3.04	2.82	2.80	2.99
D. Feedback used to recycle instructors	2.46	2.20	2.20	2.41

Table 48

Job Analysis for Programmatic Content - Sub-element Mean Ratings
(CBVE Teachers)

BVE Model Sub-element	AVTS	Community College	HS	All Sites
II-A. V-TECS task lists were reviewed by instructors to identify tasks for defined occupations.	3.41	3.36	2.26	3.22
II-B. Other task lists reviewed by instructor to identify additional tasks for defined occupations.	3.41	3.45	2.51	3.28
II-C. Task lists created for defined occupations where none are currently available.	3.12	3.45	2.17	2.97
X-C. Industry data obtained and used to determine future applicability of course content.	3.04	2.82	2.80	2.99

Note. Ratings can range from a low of 1.00 to a high of 4.00.

Table 49

Craft Advisory Committee - Sub-element Mean Ratings
(CBVE Teachers)

BVE Model Sub-element	AVTS	Community College	HS	All Sites
I-B. Employment opportunities for defined occupations are projected for 3-5 yrs. from labor market data and craft committee feedback.	3.16	3.09	2.45	3.05
I-C. Anticipated technological changes in defined occupations are determined from industry and craft committee feedback.	3.37	3.63	2.74	3.28
I-D. Course descriptions written for assigned VEMIS title based upon D.O.T. occupations and verified by craft committee.	3.29	3.45	2.54	3.17
II-D. Occupational tasks for defined occupations approved and documented by craft committee based upon industry needs.	3.28	3.09	2.33	3.12
III-D. Performance objective content reviewed with craft committee to determine validity of conditions, performance, and standards.	3.06	3.00	2.30	2.94
IV-D. Performance guide content and sequence for all identified tasks approved and documented by craft committee.	2.88	2.91	2.09	2.75
V-E. Finalized resource list reviewed and documented by craft committee.	2.74	2.82	1.92	2.61

Note. Ratings can range from a low of 1.00 to a high of 4.00

Table 50

Performance Objectives - Sub-element Mean Ratings
(CBVE Teachers)

BVE Model Sub-element	AVTS	Community College	HS	All Sites
III-A. Performance objectives from appropriate V-TECS catalog(s) identified and reviewed.	3.16	3.18	2.17	3.00
III-B. Performance objectives from other sources identified and reviewed.	3.26	3.27	2.74	3.17
III-C. Performance objectives written for tasks where none are currently available.	3.12	3.27	2.54	3.03
IV-A. Performance guides in V-TECS catalog(s) reviewed for content and sequence.	3.06	3.00	2.30	2.94
IV-B. Performance steps identified and reviewed for content and sequence for tasks not identified in V-TECS catalog.	2.96	3.50	2.34	2.87
IV-C. Performance steps written and sequenced for tasks where none are currently available.	3.02	3.40	2.41	2.93

Note. Ratings can range from a low of 1.00 to a high of 4.00.

Table 51

Individualized Student Program - Sub-element and Overall Ratings
(CBVE Teachers)

BVE Model Sub-element	AVTS	Community College	HS	All Sites
VIII-A. Tentative career objective identified and documented for each student.	3.33	3.10	2.83	3.24
VIII-B. Task list delineated and reviewed with each student for occupation in career objective.	3.04	3.10	2.11	2.89
VIII-C. Student entry level skills assessed to determine initial instructional placement in program.	2.89	3.00	2.63	2.85
VIII-D. Task list converted to an individual program for each student.	2.82	2.80	2.04	2.69
Overall Element	3.02	3.00	2.40	2.92

Note. Ratings can range from a low of 1.00 to a high of 4.00.

Table 52

Clear Expectations and Evaluation Procedures - Sub-element Ratings
(CBVE Teachers)

BVE Model Sub-element	AVTS	Community College	HS	All Sites
VII-A. Performance tests constructed for each objective based upon established standards.	3.29	3.09	3.08	3.25
VII-B. A system to convert performance on objectives to a conventional grading scale (if required) is in place and known to students.	3.19	3.09	3.00	3.15
IX-A. System developed to monitor student progress.	3.32	3.09	2.93	3.25
IX-B. System provides for the continuous feedback to the student.	3.29	3.27	2.91	3.22

Note. Ratings can range from a low of 1.00 to a high of 4.00.

Table 53

Attainment of Competency/Mastery - Sub element Ratings
(CBVE Teachers)

BVE Model Sub-element	AVTS	Community College	HS	All Sites
VII-A. Performance tests constructed for each objective based upon established standards.	3.29	3.09	3.08	3.25
VIII-C. Student entry level skills assessed to determine initial instructional placement in program.	2.89	3.00	2.63	2.85
X-A. Student completion and follow-up data compiled for course revision.	2.91	2.82	2.59	2.86
X-B. On-the-job performance of graduates assessed through employer feedback via local surveys.	2.83	2.45	2.72	2.80

Note. Ratings can range from a low of 1.00 to a high of 4.00.

APPENDIX E

OTHER PDE FUNDS RECEIVED BY CBVE IMPLEMENTERS

Table 54

CBVE Funds Received by Educational Agencies

Funding	AVTS[a]		Community College[b]		HS[c]		All Sites	
	N	Percent	N	Percent	N	Percent	N	Percent
State curriculum development	4	19	0	0	0	0	4	12
State training/staff development	5	24	0	0	1	10	6	18
Training other schools to use CBVE	1	5	0	0	0	0	1	3
Federal vocational funds	1	5	1	50	2	20	4	12
No funds received	16	95	1	50	7	70	24	73

[a] $n = 21$.

[b] $n = 2$.

[c] $n = 10$.

APPENDIX F

RATINGS OF EXTENT OF IMPLEMENTATION -

LEAs WITH OR WITHOUT CURRICULUM COORDINATOR POSITIONS

Table 55

Extent of Implementation Sub-element Ratings -
CBVE Implementers With or Without Curriculum Coordinators

BVE Model Element	Mean Rating	
	With Curriculum Coordinators	Without Curriculum Coordinators
I. Define Scope of Course		
A. Major occupations defined by D.O.T. code	3.73	3.09
B. 3-5 yrs. employment projections	3.64	3.00
C. Anticipated technological changes	3.82	3.29
D. Course descriptions-VEMIS title	3.82	3.26
II. Validate Occupational Competencies		
A. V-TECS task lists	3.73	3.22
B. Other task lists	3.73	3.11
C. Tasks lists created	3.45	2.75
D. Occupational tasks approved	3.82	3.29
III. Identify Terminal Performance Objectives		
A. V-TECS objectives	3.82	2.83
B. Other sources	3.55	2.94
C. Written when not available	3.45	2.72
D. Objectives reviewed	3.45	3.08
IV. Identify Sequential Performance Steps		
A. V-TECS guides	3.55	2.89
B. Other sources	3.55	2.80
C. Written when not available	3.27	2.64
D. Guides approved	3.09	2.97
V. Resources		
A. V-TECS lists	3.70	2.75
B. Other lists	4.00	3.03
C. Facility requirements	3.60	3.17
D. Reference material	3.55	2.89
E. List reviewed	3.09	2.71

Note. Ratings can vary from a low of 1.00 to a high of 4.00.

BVE Model Element	Mean Rating	
	With Curriculum Coordinators	Without Curriculum Coordinators
VI. Task Sequence		
A. Reviewed guides	3.27	2.94
VII. Assess Student Performance		
A. Performance tests constructed	3.55	2.89
B. Conventional grading scale	2.82	2.94
VIII. Student Instructional Program		
A. Tentative career objectives	3.60	3.58
B. Task list delineated	3.10	2.78
C. Student entry level skills	2.50	2.86
D. Task list converted	2.80	2.63
IX. Design Learning Management System		
A. System developed	3.73	3.17
B. Continuous feedback	3.82	3.11
X. Conduct Course Evaluation		
A. Student completion and follow-up data	3.55	2.69
B. On-the-job performance of graduates	3.18	2.81
C. Industry data	3.27	3.28
D. Feedback used to recycle instructors	2.50	2.31

APPENDIX G

FACTORS THAT CONTRIBUTED TO SCHOOLS' DECISIONS NOT TO ADOPT CBVE

Table 56

Factors that Contributed to Schools' Decision Not to Adopt CBVE

Factor	AVTS[a]	Community College[b]	HS[c]	All Sites
Administrative support of CBVE	3.67	3.00	3.71	3.67
Faculty support of CBVE	2.67	2.00	3.47	3.29
Practicality and/or utility of CBVE in the classroom	3.67	2.00	3.53	3.48
Perceived importance of CBVE in meeting vocational education program needs	3.67	2.00	3.47	3.43
Availability of faculty for training, preparation, and planning for implementation of CBVE	2.00	3.00	3.65	3.38
Availability of instructional resources	3.67	3.00	3.88	3.81

Note. Ratings can range from a low of 1.00 to a high of 5.00.

[a] $n = 3$.

[b] $n = 1$.

[c] $n = 24$.